University of Alberta

Disordered Eating Behaviors and Attitudes of Youth in a Northern Canadian Community

by

Joanne Roberta Tessier ©

A thesis submitted to the Faculty of Graduate Studies and Research in partial
fulfillment of the requirements for the degree of Doctor of Philosophy

in

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Abstract

The prevalence of disordered eating behaviors and attitudes with 454 youth in a Northern Canadian community, Whitehorse, Yukon was investigated. The youth were between 11 to 19 years of age and grades 7 to 12, and were from a range of ethnic backgrounds: Canadian, European Canadian, Asian Canadian, African Canadian, and Aboriginal Canadian.

Variables examined with the Whitehorse youth were age, grade, gender, ethnic background, percentage of ethnic diet, and residence. In addition, the Whitehorse youth were compared to youth from the larger, more centralized locations of southern Ontario and northeastern United States on the measures of the Eating Disorder Inventory-Second Revision (EDI-2).

It was found that between 2.4 to 8.6 % of the boys and 1.6 to 6.5 % of the girls showed a propensity for eating disorders. Boys reported a wide range of issues including bulimia, interpersonal distrust, impulse regulation, maturity fears, and social insecurity. Girls reported specific disordered eating behaviors and attitudes, such as the drive for thinness and body dissatisfaction. Maturity fears were a concern for Whitehorse youth, however they were greatest for the younger students. Body dissatisfaction was primarily a concern for the older students. A significant proportion of the Asian Canadian youth, the youth with greater percentage of ethnic food in their diet, and who reside away from family and community acknowledged disordered eating behaviors and attitudes.

It was found that Whitehorse youth had fewer disordered eating behaviors and attitudes than did the youth from southern Ontario (n=610) and northeastern United States (n=1373).

Conclusions drawn from this research were that youth in smaller, less centralized communities are less likely to have eating disorder concerns. It was premised that boys' disordered eating behaviors and attitudes may overlap with other psychological and behavioral problems. Furthermore, it was suggested that the EDI-2 subscales of *Drive for Thinness* and *Body Dissatisfaction* might be used for the identification of eating disorders in girls because of their more specific concerns. School-based prevention programs and a multidisciplinary approach were recommended.

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Chapter I: Introduction

This study was conducted in order to investigate the prevalence of disordered eating behaviors and attitudes in 454 youth between the ages of 11 to 19 in a Northern Canadian community, Whitehorse, Yukon. In addition, students were categorized according to age, grade, gender, ethnic background, ethnic diet, and residence in order to examine potential factors involved in disordered eating behaviors and attitudes. Finally the students in Whitehorse were compared to the students in Ontario and northeastern United States on the EDI-2 measures of disordered eating behaviors and attitudes.

This study was considered important in order to identify the degree of and factors involved with occurrences of disordered eating behaviors and attitudes in this seldom-researched and potentially unique community. It was proposed that there are factors in the North that are implicated in the eating behaviors and attitudes of the youth. Another reason why this study was considered important is there has been no eating disorder research of youth in Whitehorse or elsewhere in northern Canada. In this chapter, there is a brief explication of eating disorders, clarification of concepts used in this research paper, descriptions of Whitehorse and Northern living conditions, and discussion of the research questions and objectives.

Eating Disorders

Eating disorders have been described differently throughout the ages, as Brumberg (1988) illustrated in her seminal work *Fasting Girls*. At various times and in various cultures, "fatness" or "thinness" has been considered either a positive or a negative attribute. Given the variation in approaches and explanations taken with eating disorders, it is difficult to pinpoint the specific etiological factors. An acknowledged source of definition that medical and psychological practitioners often refer to for diagnostic purposes is the *Diagnostic Statistical Manual for Mental Disorders – Fourth Edition* (*DSM-IV*), published by the American Psychiatric Association (1994). A summary of the *DSM-IV* diagnostic criteria is included here in order to provide a preliminary description of eating disorders. Further explanations of eating disorders integrated from a variety of sources are discussed in the literature review.

The descriptions of two main eating disorders, anorexia nervosa (AN) and bulimia nervosa (BN) are in the *DSM-I V*. In addition, there is a research criteria category for binge-eating disorder (BED), as well as a category for eating disorder not otherwise specified (EDNOS), which is used for coding related problems when criteria for a specific eating disorder are not met. In order to diagnose an eating disorder according to the *DSM-IV* diagnostic criteria several physical, psychological, and behavioral symptoms must be present.

To diagnose AN, there must be evidence of the physical symptoms of significant weight loss and amenorrhea. In addition, there are criteria for psychological symptoms of fear of gaining weight and disturbance in perception of one's body and shape, and behavioral symptoms of refusal to maintain body weight, and either the restricting of food or binge-eating/purging. There are no physical symptoms noted for BN in the *DSM-IV*. However, psychological symptoms are described: one's tendency to self-evaluate based on body shape and weight and a sense of lack of control over eating. As well, the behavioral symptoms are specified: eating large amounts of food in a discrete period of time (bingeing) and recurrent inappropriate compensatory behavior such as self-induced vomiting, misuse of laxatives and diuretics, and excessive exercise. As with AN, individuals can be classified as purging or non-purging types. The psychological and behavioral diagnostic criteria for BED are similar to those specified for diagnosis of individuals suffering from BN. The BED behaviors are described as comparable to BN behaviors owing to binge eating. However, BN and BED are also considered incongruous because BED individuals do not engage in the inappropriate compensatory behaviors than BN individuals do (American Psychiatric Association, 1994, pp. 539-550 & 729-731).

Garner (1991) indicated that eating disorders affect a growing number of adolescents. Many researchers agreed that both AN and BN may occur in as many as 1 to 4% of female high school and college students (Herzog, Norman, Rigotti, & Pepose, 1986; Drewnowski, Yee & Krahn, 1988; Leichner & Gertler, 1988; Pyle, Halvorson, Neuman & Mitchell, 1986 & Szmukler, 1985). Anderson (1990) found that eating disorders are less common in males than in females. He estimated that eating disorders in males turn up in approximately 1 out of 6 boys. Halmi, Falk & Schwartz (1981) surveyed a nonclinical population of 355 college students and noted that 5% of the males experienced symptoms of bulimia. In addition to investigating clinical and general populations for eating disorders, researchers have targeted their efforts at identified risk populations. Some of these researchers found greater occurrences of eating disorders or subclinical eating disorders in athletes and dancers who experience above average pressure to diet or maintain a thin shape (Rosen & Hough, 1988, Warren, Stanton, & Blessing, 1990, Brooks-Gunn, Burrow & Warren, Garner, Garfinkel, Rockert & Olmstead, 1987 & Enns, Drewnoski, & Grinker, 1987).

Eating disorders can be life threatening. Researchers who investigated anorexia reported varying rates of mortality that fluctuated between 0 and 21% (Halmi, Falk & Schwartz; 1981; Theander, 1985; & Patton, 1989). Hsu (1990) stated that beyond the life threat of an eating disorder, it is a problem in which compromises are evident in one's health; social life; and intellectual life; and, in children and adolescents, one's development. Given the seriousness of eating disorders, it is important that as researchers identify numbers of persons affected, they also attempt to better understand the precursors of eating disorders.

Clarification of Concepts Discussed in this Dissertation

There are several possible ways of studying and reporting the rates of eating disorders in a population. Consequently, there is also a potential for confusion when reviewing the results of research. Researchers have employed various methods such as questionnaires, retrospective studies, clinical records, and interviews. As well, they have used comparable terms to report the rates such as the "prevalence," "incidence," and "propensity" of eating disorders.

In the *Oxford Dictionary* (1983) the definitions of "prevalence" and "incidence" provided are similar and refer to "the rate of something existing or occurring." "Propensity" is defined as "tendency or inclination." These dictionary definitions fail to capture the more specific formulations of these words when used to describe research results. For example, Shoemaker (1998) defined "prevalence" as the actual number of cases in a defined community (usually a population at risk) at a particular point in time. He described "incidence" as the number of new cases in a specified period of time in the general population. Generally, the terms "prevalence" and "incidence" are utilized in this paper to present the rate of actual diagnosed cases of eating disorders.

Less succinct methods were used to describe eating disorder concerns in the general population, primarily because actual diagnoses were often not possible. As a result, studies were adapted to either permit potential diagnoses or were worded to fit the limitations of the research. Shoemaker (1998) described studies in which questionnaire administration was supplemented with follow-up interviews pursuant to the confirmation of diagnoses. Thomas (1996) completed a Master's thesis study on Native American women in which she measured the prevalence of disordered eating behaviors and attitudes as opposed to prevalence of eating disorders. Laverty (1995) in her Master's thesis used the term "propensity" to report the tendency or inclination for an eating disorder in a sample of Edmonton junior high students. Finally, some researchers looked at specific aspects of eating disorder precursors or symptoms. For instance, Stice, Mazotti, Krebs, and Martin (1999) examined the correlates and predictors of dieting in a community sample of adolescent girls.

Essentially, the varying definitions of eating disorders and the range of the methods used are partly responsible for discrepant results. Garfinkel, Lin, Goering, Spegg, Goldbloom, Kennedy, Kaplan, and Woodside (1995) studied BN and reported that some epidemiological studies of this eating disorder have generated differing estimates of incidence and prevalence. Gleaves, Lowe, Snow, Green and Murphy-Eberenz (2000) researched clinical and nonclinical samples for BN and concluded that such confusion is due to the taxonomic categorizations made for this eating disorder. They further added that comparisons of clinical and nonclinical populations may not be valid. This concern regarding which population should be studied when determining prevalence was also voiced by Fairburn and Beglin (1990). They found that the prevalence rates obtained from eating disorder questionnaires to be about 3 times higher than those determined by interview methods.

In this research, the terms "prevalence," "incidence," and "propensity" were referred to when reporting results from various studies. For the purposes of reporting the results of this investigation, the approach adopted was the investigation of disordered eating behaviors and attitudes. Because the Eating Disorder Inventory – 2 (EDI-2) was utilized for this research project, verification of eating disorder diagnoses was not possible. However, it was proposed that there was a greater likelihood of risk for eating disorders with the greater number and severity of disordered eating behaviors and attitudes reported by the students. Thus with this approach, it was possible to investigate the potential exacerbating or protecting influences as well as make speculations with regard to risks for eating disorders in these youth.

In this dissertation, the terms "Aboriginal" and "First Nations" and "Native Canadians" were all used interchangeably. In the Yukon, people often used the term "First Nations people." In the literature reviewed, the terms "Aboriginal" and "Native Canadian" were most often used. All appeared to be politically correct and were used interchangeably throughout this dissertation.

The terms "ethnicity," "ethnic background," and "culture" were discussed in the context of this study of disordered eating behaviors and attitudes. Census Canada (1996) defined "ethnic origin" as the ethnic or cultural group to which a respondent's ancestors belong. For the most part, ethnic origin pertained to ancestral roots or background of the person and was not confused with place of birth, citizenship, or nationality. A key focus adopted in this research was one's identification with their ethnic background. However, the EDI-2 measures for each of the student groups categorized according to ethnic background were also examined. There was a large proportion of Aboriginal people living in Whitehorse; thus, there was the opportunity to examine occurrences of disordered eating behaviors and attitudes in Aboriginal youth.

The category of "Canadian" as an ethnic origin was included. Census Canada (1996) found that 19% of the total Canadian population and 15% of the total Yukon population reported "Canadian" as their only ethnic background. It was likely that many Canadians perceived their roots as entirely Canadian.

Essentially, the terms, "ethnicity" and "ethnic background" were used to describe actual ancestral roots. Furthermore, the term "culture" was adopted to describe the associated habits, customs, and practices of a particular ethnic group. It is important to note that culture was also considered a description of the customs and practices of several types of groups, such as "youth culture" and "beauty culture."

Northern Living Conditions

Many population groups have been investigated for eating disorders in various communities throughout North America and Europe. The Whitehorse youth were considered unique because they had not been studied previously and because they lived in the North. The most commonly noted differences between Whitehorse and communities in southern Canada and United States were the weather, the distances from large urban centers, and the lack of social resources (Dacks, 1981; Dickerson, 1992 & West, 1995). These differences and others were discussed to depict their potential influences on the occurrence or non-occurrence of disordered eating behaviors and attitudes in the Whitehorse youth.

This researcher noted several conditions while living in Whitehorse. Key conditions that were distinguished by residents were that it truly was "north of sixty." What this meant for many was that it was cold and dark for several months of the year. However, northern Canada was also considered different from southern locales in many ways beyond latitude and temperature. Yukoners consider their "demographics" unique. Many were proud of their "great outdoors" and had claimed that there were more bears and moose than there were people in the Yukon (Personal communications, 1996-1999 & Lost Whole Moose Catalogue, 1999).

The demographics are slightly different in the North than they are in southern Canada. Dacks (1981) stated that there are diverse Aboriginal and Non-Aboriginal groups of people in the Yukon. He cautioned that generalizations made of either group could potentially hide more than they reveal about them. Dacks described the Non-Aboriginal population as consisting of two types of people: the long-term residents who have moved their families and are committed to their new home, and the transients who moved to the Yukon for economic opportunities and have less commitment to the community. People are transient in the North primarily as a consequence of the fluctuating mineral and resource economy (Yukon Bureau of Statistics, 1994).

There are a greater proportion of Aboriginal people in the Yukon, and elsewhere in the North, than in southern Canada (Yukon Bureau of Statistics, 1999; NWT Bureau of Statistics, 2000; Nunavut Bureau of Statistics, 1999; Dickerson, 1992; Ponting, 1997; & Statistics Canada, 1996). Furthermore, Dacks (1981) indicated that there is considerable diversity within the First Nations communities because they are organized by regional and linguistic groupings. In the Yukon alone there are 16 First Nations regional groups and 8 Aboriginal languages spoken (Department of Indian and Northern Affairs, 1998). As well, many people who write about the North contend that the First Nations people in the North are more emotionally identified to their cultural backgrounds than urban First Nations people are (Dickerson, 1992; Coates, 1991; Dack, 1981 & Ross, 1992). One reason given for this fact is that they enjoy easier access to more traditional ways of life such as hunting and fishing (Yukon Bureau of Statistics, 1994).

Beyond the weather, wildlife, and "people" aspects of living in Whitehorse, and elsewhere in the North, there are the limitations in access to urban conveniences and social services. Whitehorse youth possess fewer shopping opportunities than do southern Canadian youth. Students in rural communities of the Yukon must relocate to larger centers for schooling (Yukon Bureau of Statistics, 1994). Northern residents must travel to southern Canada for serious medical treatment (Yukon Bureau of Statistics, 1994). In particular to eating disorders and the Yukon, concerned parents, teens, and teachers have indicated that they have few treatment options (Personal communications 1996-1999).

It is very likely that citizens of small communities throughout Canada share many of these concerns about isolation. However, in the Yukon, distance was another factor: people need to travel great distances in order to access larger centers that provide social, economic, and cultural resources. This is considered not entirely detrimental, owing to the fact that many Northerners chose such a setting and develop activities to foster a unique northern culture and identity.

In Whitehorse, there are several activities and celebrations throughout the year. There is the Storytelling Festival in June, in which various Aboriginal and Non-Aboriginal themes are featured. In February, there are sled dog races between Alaska and the Yukon; a three-day music festival called *Frostbite*, and the *Rendezvous* celebration of the Klondike. Recently, the Whitehorse citizens hosted circumpolar sports events and conferences. These circumpolar events were considered essential to the development of connections between various northern people. Participants came from areas such as Alaska, Greenland, Russia, Nunavut, Northwest Territories, and Norway. In the First Nations community, several potlatches are celebrated throughout the year. Potlatches typically involve sharing of food by people who gather to celebrate or mourn.

Given these cultural and social depictions of Northern living, one might infer that living in a northern community such as Whitehorse might actually be a beneficial factor in the protection against eating disorders. There are activities for youth from which they may potentially reap the benefits of a northern cultural identity and kinship. In addition, youth in the Yukon have less access to venues that are potentially involved in the sociocultural pressures of "body image" as felt by southern Canadian youth. Nonetheless, there is also a contrary inference to consider: Whitehorse youth have less access to prevention and treatment resources. Social, health, and psychological problems have been identified in the Aboriginal and Non-Aboriginal people of the North.

In the *Accounting of Health* survey completed by the Yukon Bureau of Statistics (1994), there were substance abuse issues noted. According to the results, there are 3 times more marijuana or hashish users in the Yukon than in the rest of Canada. While the numbers of drinkers in the Yukon and the rest of Canada were similar, there were greater numbers of female drinkers in the Yukon than in the rest of Canada.

Ponting (1997) described concerns for Aboriginal people throughout Canada. His research is worth noting because there is a large proportion of Aboriginal people in Whitehorse and elsewhere in the North. Statistics Canada (1996) reported that 20.1% of the Yukon population is First Nations, as opposed to only a 2.8% population of First Nations people in southern Canada. The Northwest Territories Bureau of Statistics (2000) reported that 29% of the population was First Nations. The Nunavut Bureau of Statistics (2000) reported that there was a much higher proportion of First Nations people: 60%.

Ponting (1997) referred to government data to report on specific concerns he noted. He found that Registered Indian Males between the ages of 15 and 24 had a suicide rate that was 4 times the rate of their same-age counterparts in the larger Canadian population. Other problems more closely related to eating behaviors and attitudes have been investigated in First Nations people. In the Aboriginal People's Survey (1991) it was reported that 8.6% of the on-reserve and 5.5% of the off-reserve Aboriginals in Canada had diabetes. Ponting suggested that this was a notable concern related to disturbed eating behaviors and attitudes because obesity is recognized as a potential precursor to diabetes – type II and to eating disorders. Young (1991) and the researchers involved in the administration and analysis of the1991 Canadian Fitness Survey corroborated this concern. They found a large proportion of obesity in all age-sex groups in six Northwestern Ontario and Northeastern Manitoba Cree and Obijiway communities.

At present, there appears to be no published research regarding eating disorder prevalence in Aboriginal youth of the North. However, the research noted above and other research was indicative of a range of concerns regarding the psychological and physical wellbeing of First Nations youth (Ponting, 1997; Dacks, 1981; Ross, 1992; O'Dickerson, 1992 & Kleinfield, 1994).

In essence, there are positives and negatives incurred when living in any community. In this discussion, it was submitted that there are opportunities to participate in cultural activities in Whitehorse, just as there are restrictions, such as fewer resources and greater distances one must to travel for services. Also noted were some of the health, social, and psychological concerns of people in Whitehorse. It was contended that some aspects of these living conditions are protective factors against the onset of an eating disorder. It was also suggested that some of these living conditions are risk factors, this viewpoint was taken because of the limitations for treatment of existing eating disorders in Whitehorse.

Research Questions

The primary question addressed by this research was "What is the prevalence of disordered eating behaviors and attitudes in the youth of Whitehorse?" There were several more related questions with respect to the investigation of the following factors: age, grade, gender, ethnic background, ethnic diet, residence, and the comparisons of Whitehorse youth with other youth groups in Southern Ontario and northeastern United States. These questions were grouped into three categories: (a) questions pertaining to population characteristics, such as what the prevalence is for the overall population; (b) questions pertaining to the students categorized according to gender, age, grade, ethnic background, ethnic diet, and residence; and (c) questions regarding the reliability of the data and generalizations that can be posited, such as questions regarding the similarities or differences of students in the schools and within the various grades and age groups. Each of these related questions is included below. In addition, discussion regarding the rationale for each question is presented.

(1) What is the prevalence of disordered eating behaviors and attitudes in the Whitehorse students according to gender?
(2) What is the prevalence of disordered eating behaviors and attitudes in each of the Whitehorse age and grade groups of students?
(3) What is the prevalence of disordered eating behaviors and attitudes in students in each of the Whitehorse schools?
(4) How do the disordered eating behaviors and attitudes in the Whitehorse youth compare to youth groups, who live in larger and centralized southern Canadian and northeastern United States?
(5) What is the prevalence of disordered eating behaviors and attitudes in each of the Whitehorse ethnic background student groups?
(6) What is the prevalence of disordered eating behaviors and attitudes in the Whitehorse First Nations youth?
(7) What is the prevalence of disordered eating behaviors and attitudes in groups of students categorized according to the percentage of ethnic food in their diets?
(8) What is the prevalence of disordered eating behaviors and attitudes in students who must leave their families and communities to attend high school?

Discussion of Research Questions

Researchers who have studied the onset and maintenance of eating disorders have indicated that gender and age are commonly identified factors (Garner, 1991; Hsu, 1990; Shore & Porter, & Vandereyecken, 1998). Many researchers agreed that females are at greater risk for eating disorders, and that older teens and young adults are at greater risk than younger teens and children, and older men and women (Flament, Ledoux, Jeammet, Choquet & Simon, 1995; Russell, 1986 & Stewart, 1998).

Less-researched factors of ethnic background, ethnic diet, and residence were also considered. These factors were included for two reasons: first, these factors have not been investigated as extensively and the results might be applied to better understand the precursors of eating disorders; second, because it was possible that the experience of living in Whitehorse may make them relevant. The factors of grade and school were included to ensure that the results were applicable to the age groups found in each grade and to ensure that the results were homogeneous among the schools. It was felt that if no differences were brought to light with the analysis of the school and grade factors, then conclusions regarding the 454 youth might be considered representative of the overall youth population in Whitehorse and potentially of other Northern Canadian youth. Essentially, the primary goal regarding the assessment of the factors of age, gender, ethnic background, ethnic diet, and residence was to ascertain whether or not these factors are involved in disordered eating behaviors and attitudes found in the Whitehorse youth and, if they are, to provide appropriate recommendations.

The research question regarding urban versus rural youth prevalence for eating disorders, attitudes, and behaviors was based on defining Whitehorse as rural or semi-urban. Statistics Canada (1999) indicated that Whitehorse was a city of approximately 19,000 people. In Whitehorse, citizens enjoy some of the resources found in a large city because it is the capital of the Yukon. However, there was also an acknowledgement that there are fewer services and resources in Whitehorse. Essentially, Whitehorse was described as semi-urban or rural because of the small population and because of the limited access to shopping and other resources. To assess the possible influence of living in a small community versus a large one, the Whitehorse students were compared to youth in the larger centers of southern Canada and northeastern United States (Shore & Porter, 1990 & Rosen, Silberg & Gross, 1986).

There were two reasons for investigating differences between youth in different population settings in this study. First, to expand on research regarding eating disorders and other related psychological concerns, which has to date been inconclusive with respect to urban and rural or semi-urban youth. And second, to determine the accuracy of the contention that Whitehorse youth, like other rural or semi-urban youth, are less likely to experience eating disorder concerns.

There was some research directed at youth and adults with regard to eating disorders and level of urbanization. Hoek (1991) reviewed the literature on rural and urban eating disorder occurrences and found comparable numbers of cases of anorexia in both urban and rural settings and greater numbers of bulimia cases in urban settings. He concluded that the prevalence of eating disorders is generally lower in smaller communities. Other researchers have found that people from rural areas and small cities are protected from the sociocultural influences on appearance. For example, De Azevedo and Ferreira (1992) completed research comparing rural and urban youth in less industrialized countries than Canada. They found that the youth there are isolated from sociocultural pressures on appearance. They suggested that these youth are less influenced than youth of more Western industrialized countries. Although De Azevedo and Ferreira were looking at additional factors of less industrialized societies and economic structures, their findings were of particular interest in this study of adolescents in Whitehorse, who are geographically insulated from some sociocultural influences of mainstream Western society.

With this urban versus rural or semi-urban question, there were other factors aside from population and resources to consider. The isolation and distances experienced in northern communities the size of Whitehorse and smaller may be implicated in occurrences or non-occurrences of eating disorder behaviors and attitudes. This possibility was discussed earlier, where aspects of living in the North were presented. Fundamentally, it was premised that the Whitehorse youths' isolation from the media exposure and shopping opportunities available to urban youth is a protective factor against excessive preoccupation with body image. On the negative side, given the isolation and distances from larger southern centers, Whitehorse youth have fewer opportunities to test and develop confidence in their ability to cope with the demands of a complex and highly technological society.

In addition to the northern culture and identity that one may experience in Whitehorse and other areas of the North one must consider the culture of one's ethnic background. For some Canadians, ethnic background is of little concern, particularly with respect to eating behaviors and attitudes. However, for many other Canadians, their ethnic background is a primary aspect of their lives and is involved in many of their behaviors and attitudes. In this study, the role of the students' ethnic background, ethnic diet, and residence in eating behaviors and attitudes was investigated.

At present, few eating disorder researchers have studied ethnic background factors with adolescent populations. There are various beliefs regarding the relationship between eating disorders in adolescents and ethnic background. One proposal put forth by Pumariega (1986) was that it is the degree of acculturation into North American society that is involved in the occurrence of eating disorders in minority youth and adult populations. Essentially, he suggested that the likelihood of disordered eating behaviors and attitudes increases with one's level of acculturation. Researchers of eating disorders who have utilized eating disorder questionnaires have found that there is a lower prevalence of eating disorders and related "body weight" concerns in certain ethnic groups. They also indicated that there are increases in these concerns as the exposure to "Western values" increases (Babbitt, Edlen-Nezin, Manikam, Summers & Murphy, 1995).

Ethnicity was not the entire focus of this ethnic background question, although the First Nations youth were of interest because of their large population in Whitehorse. Instead, like Pumariega (1986), the cultural aspect of ethnic background was considered. In particular, it was proposed that greater identification with one's ethnic background and related culture is a protective factor against disordered eating behaviors and attitudes.

There have been examples of the facilitation of youth's developmental transitions by one's culture cited in anthropological studies. Brooks-Gunn and Reiter (1992) described various anthropological studies of puberty rites, which were used to assist youth with developmental transitions so that they could experience pride as they enter into adulthood. In many cases, puberty rites were common practices for early Aboriginal people. Carlick (1995) described the puberty rites of the Inland Tlingit people. One example presented that was related to eating behaviors was that girls were isolated and observed food taboos in order to pass symbolically from childhood to womanhood. In summary, in analyzing the ethnic variable, a primary question posed was whether or not one's identification with his or her cultural and ethnic background is a protective factor or a risk factor in disordered eating behaviors and attitudes. Eating disorder research regarding percentage of ethnic food in the diet and residence was not found. In all likelihood, this was because there was no existing data on these topics. Since these were novel considerations, an explanation and rationale for considering them is included below.

Specific to this research was the proposal that a greater percentage of ethnic food in the diet might be indicative of co-occurring protective factors against disordered eating behaviors and attitudes. More specifically, in this research there was the suggestion that a youth who reports a greater percentage of ethnic food in the diet may also enjoy the benefits of greater family and ethnic/cultural involvement. Also suggested was the premise that a greater amount of ethnic food in the diet is characteristic of healthier nutritional opportunities. The reasoning here was based on intuitive supposition that although persons within each ethnic group eat somewhat different foods, most of them incorporate foods that are recognized as essential to meeting a body's nutritional requirements. Thus, the proposition was that students who reported a greater percentage of ethnic food in their diets were protected from eating disorder problems socially and emotionally by greater familial and interpersonal support and physically by healthier eating practices.

The question regarding "residence" was posed because several rural Yukon students had to leave their home and community to attend school in Whitehorse. It was contended that for the most part, family and community are important protective factors against eating disorders. Consequently, students who must move away from their family and community for school might very likely experience psychological isolation. In addition, they might have fewer healthy eating opportunities found in the shared meals and nutritional foods characteristic of family dining. Essentially, the position considered was that moving away from one's family and community might present as a risk factor for youth. The reasoning applied was that the youth are isolated from their support system and lack the social and nutritional benefits of meals with the family. Furthermore, students who are strongly identified with their ethnic background are separated from their traditions and customs.

One can refer to some research findings to identify the consequences of separation from one's community. For example, Wein and Wein (1995) reported that the incidence of diabetes mellitus is greater for Aboriginal people that live in the southern urban areas as opposed those who live in the small community settings of the North. Drawing from this finding, it was suspected that for some Aboriginal people access to one's community and corresponding traditional eating practices are protective factors against eating disorders. This factor might also be applicable with the other ethnic groups that were investigated.

Essentially, both of the questions regarding ethnic food in diet and residence were formulated based on the belief that the psychological and physical benefits of identification with and belonging to a family and community are essential to healthy eating behaviors and attitudes. The Whitehorse youth provided the unique opportunity for exploring these research questions. These young people came from a range of ethnic backgrounds, and many left their homes and communities to attend school.

Outline of the Dissertation

In Chapter Two, past and current understanding of eating and eating disorders are discussed. Definitions of normal eating behavior and eating disorders are included. There is a range of definitions, explanations, and approaches for eating disorders, such as the biomedical, social, cultural, and psychological approaches. In addition, each of the variables investigated in this study is discussed: age, grade, gender, ethnic background, ethnic diet, and residence. Finally, research regarding eating disorder prevention and intervention is presented.

In Chapter Three the procedures of investigation and analysis are described. These include the selection of a research approach and questionnaire, and the procedures employed to gather and analyze data. As well, preliminary limitations and delimitations are considered. In Chapter Four, the data results are presented and discussed. In Chapter Five, there is discussion of the implications of the findings. In particular, prevention, intervention, and treatment possibilities applicable to Whitehorse youth are considered. Finally, the limitations and delimitations of the study are reviewed and recommendations for further research efforts are provided.

Chapter 2: Literature Review

Descriptions and Definitions of the Eating Disorders

A great deal of effort has been focused on looking for and identifying causes of eating disorders. Generally, it is agreed that there are psychological, behavioral, and physiological markers involved in eating disorders. AN and BN are the two most common and life-threatening eating disorders. According to James (1989), AN and BN have been described as both syndromes and symptoms. As syndromes, eating disorders are characterized by dysfunctional eating and weight-reducing behaviors. As symptoms, the eating disorders are diagnosed as secondary to other psychiatric concerns such as schizophrenia and depression. Although not diagnosable conditions according to the *DSM-IV* (1994), serious eating problems such as overeating, obesity, and irregular dieting have been linked to AN and BN as predisposing factors (Lawrence & Dana, 1990; Polivy & Hermann, 1985; Striegel-Moore, 1993; Stice & Agras 1997; Stice, Maztotti, Krebs & Martin, 1998). These subclinical eating problems are important to consider when identifying at-risk behaviors and attitudes associated with eating disorders. As with the effects of eating disorders, one's functioning and overall fulfillment and enjoyment of life is compromised when one has a subclinical eating problem. Descriptions and explanations of the eating disorders and subclinical concerns regarding eating problems are in the following sections.

Anorexia Nervosa

The Latin translation for "anorexia nervosa" is a "nervous lack of appetite." This definition is misleading because the sufferer of AN is often hungry and struggles to control his or her appetite and obsession with food (Garner & Garfinkel, 1985; Levenkron, 1982; Long, 1987; Sacker & Zimmer, 1987).

AN is characterized by many defining attributes such as hormone disturbances, the physical consequences of fasting, use of laxatives, hypothalamus abnormalities, and co-existing affective disorders (American Psychiatric Association, 1994; Bruch, 1973; Sours, 1980 & Carlson, 1986). Persons with AN show a morbid fear of body fat. Crisp (1997, 1998) described this fear slightly differently for adolescents, "The adolescent with AN shows a fear of adolescent weight and its maturational consequences, not a fear of fat (p.49)."

In contrast to a diverse age range found with other eating disorders, anorexia occurs primarily in teens and young women. The reason younger age groups are more vulnerable to AN has been attributed to several factors. From a medical-biological perspective, the appearance of AN at a young age may be due to changes in a young woman's endocrine (hormones) status, which in turn is involved in metabolism alterations. For example, Carlson (1986) reported that food intake and body weights of lab animals are affected by the hormones progesterone and estradiol. He suggested that this hormone factor is similarly involved in the human female's food intake and body weight (p. 475). Another often cited factor is that the behaviors of young women such as prolonged fasting and use of laxatives have adversely affected their metabolisms (Halmi, 1978 & Sours, 1980). From a psychodynamic viewpoint, Bruch (1979) described AN as one's inability to face the task of maturation because of delayed ego development, family dysfunction, and personality characteristics.

Hsu (1990) listed the physical signs of AN as "striking emaciation, dry skin, yellowish discoloration, lanugo over the trunk, face and extremities, cyanotic peripheries, dependent edema, and stunted growth especially in early onset anorexia nervosa" (p.40).

Bulimia Nervosa

Bulimia is a relatively new diagnostic category in eating disorders. Russell (1992), who had conducted extensive research and treatment with the eating disorders, first coined this term and specified the diagnostic criteria in the 1970s.

The Latin translation for bulimia nervosa is "nervous eating like a bull." Key problems of this eating disorder are noted beyond this definition. These include feelings of disparagement and depression after a binge, a morbid fear of becoming obese, and lack of control over food consumption. There also appears to be a cluster of behaviors, attitudes, and personality characteristics associated with bulimia. Essentially, individuals with bulimia engage in overeating and bingeing behaviors, purging behaviors, and present with a belief that this is the only way to control weight. The personality characteristics of individuals with BN are varied. However, the most common presentations noted are impulsivity, low self-esteem, borderline personality disorder, and poor coping strategies (Garner, 1991; Russell, 1992 & Crisp, 1997).

Key behavioral characteristics of BN are bingeing and purging through a variety of methods, including regurgitation, excessive exercise, fasting, and strict dieting. Reasons given for the binge-purge behavior have been described as bingeing or overeating to deal with stress, and purging to reduce anxiety regarding fear of gaining weight from overeating(Personal communications from clients, 1995-1999). Garner (1991) suggested that individuals with BN experience "fear of fat" and "drive for thinness" to the same degree that persons with AN do.

The difference between these two eating disorders can be identified in the behavioral approach each individual uses when dealing with food. A person with BN usually ensures weight control by purging, while the person with AN usually controls weight with severe food restriction. Stice and Agras (1999) completed a study with 265 women who were diagnosed with bulimia and discovered that there are two subtypes: the ones presenting with dietary problems and those with a mix of dietary problems and depressive presentation. The latter groups of women reported more eating and weight obsessions, social maladjustment, and higher rates of mood, anxiety, impulse control, and personality disorders. Stice and Agras suggested that dieting is a central feature of bulimia and that the depressive affect is evident in a subset of cases.

Practitioners who work with persons who have eating disorders and researchers of the incidence and prevalence of eating disorders have indicated that diagnosis is difficult because of the secrecy and embarrassment the sufferers experience (Hsu, 1990 & Vandereycken & Noordenbos, 1998). In a former study of eating disorders, one participant who had formerly struggled with BN stated, "Bulimia was a more acceptable addiction than other addictions. It's clean" (Tessier, 1993). Apparently, as with addictions, one's disclosure of the eating disorder was an important first step in recovery, and this person had achieved that first step.

Individuals with bulimia are more difficult to identify by body size and weight than individuals with anorexia. Some persons with bulimia have characteristics of anorexia, in that they are skeletal-looking, while others can fall within a range of body types, from normal size to and significantly overweight. Hsu (1990) described some of the physical signs of BN sufferer: "They may appear flushed, have swollen salivary glands, dental erosion and callouses on the hands" (p.40).

Binge-Eating Disorder

Lawrence and Dana (1990) suggested that compulsive eating behavior might represent a third serious eating disorder. It is recognized as a potential diagnosable disorder in the *DSM-IV* (1994) and called binge-eating disorder (BED). This diagnostic category is described as one requiring further research. The person with binge-eating disorder is usually overweight; however, there are some individuals that control their weight by purging or by the use of laxatives. They may be within a normal weight range for their body types. Like a person suffering from BN, a person that has BED eats more than he/she needs or wants because of confusion regarding physical and emotional cues. Also, like a person suffering from BN, the binge-eater suffers from attributing body size and food consumption with social identity and self-concept. Wilfley, Friedman, Dounchis, Stein, Welch & Bail (2000) investigated the rate and treatment implications of co-morbid psychopathology in BED occurrences. They indicated that depression and other Axis I and Axis II disorders in the *DSM-IV* are significantly related to the severity of BED. They also indicated that persons with BED are more likely to have the Cluster B personality disorder problems such as borderline personality disorder and narcissistic personality disorder. Thus, these persons may appear to be somewhat dramatic, emotional, and erratic.

Other Eating Problems

Other eating problems that were noted in the literature were not as clearly identified as an eating disorder. However, they were noted for the effects on emotional, physical, and social health and could be considered precursors to diagnosable eating disorders. These eating problems were described in the literature as activity anorexia, developmental and reactive obesity, excessive overeating, excessive dieting and exercising, and "thin-fat" people. (Epling & Pierce, 1991; Kron, Katz, Gorzynski & Wuner, 1978; Wheeler, 1990; Orford, 1985; Bruch, 1957, 1973). I reviewed these eating problems in the literature review because there are more occurrences of subclinical eating disorders, disturbed body image and dieting, and disordered eating behaviors and attitudes than there are actual occurrences of eating disorders within the general population.

Activity Anorexia

Activity anorexia has been described as a subcategory of AN (Epling & Pierce, 1991; Kron, Katz, Gorzynski & Wuner, 1978 & Wheeler, 1990). This eating problem is the result of the interaction and reinforcement of two behaviors: overactivity and food avoidance. Epling & Pierce (1991) and Kron, Katz, Gorzynskie and Wuner (1978) described the physical and psychological processes of activity anorexia in the following way. An individual with activity anorexia experiences a change in his or her personality and refuses food or eats small amounts. The decision of whether or what to eat is determined according to the amount of exercise he or she does, usually it must be at least 2 to 3 hours a day in duration. Paradoxically, the person with activity anorexia eats less as he or she gets more exercise although his or her body requires more food. Epling and Pierce (1991) attributed this paradox to the effects of neurotransmitters: When endorphins are released as a result of excessive exercise, a feeling of fullness and contentment is induced, thus the individual experiences a reduced desire and motivation to eat.

Wheeler (1990), who studied both male and female athletes, described a similar phenomenon. He depicted eating disorder behaviors on a behavioral loop. People are reinforced by the positive feedback they receive for a slim appearance; consequently, a dysfunctional interaction of compulsive exercise and poor eating habits is perpetuated. Wheeler suggested that this behavioral loop is common among athletes and professional dancers. Activity anorexia is an important eating problem to note and recognize as a potential precursor or cousin to AN, especially in physically active populations.

Obesity

Discussion of obesity is included here as a risk factor for a subclinical eating disorder because some researchers have identified a link between the dieting of obese individuals and occurrence of eating disorders (Marcus, Wing, & Lamparski, 1985; Hudson et al, 1988; & Marcus & Wing, 1987). Furthermore, researchers have noted that occurrences of eating disorders in males are usually preceded by premorbid obesity (Lawrence, 1990 & Hsu, 1991). As well, obesity had been identified in the First Nations community in Canada (Ponting, 1997). Finally, obesity is considered a widespread concern (Critser, 2000; Stacey, 2000; Young, 1999; & *Journal of Medical Association*, 2000). Garner (1991) included the EDI-2 scales *Bulimia* and *Impulse Regulation* in order to assess eating disorder symptoms such as binge eating. He indicated that some obese individuals who binge might warrant a diagnosis of bulimia.

Hilde Bruch (1957) reported that there are obese people with and without psychological concerns. She described three categories of obese people with psychological concerns. She said there are *reactive obese* people, who engage in overeating in response to stress and who tend to use food as a source of comfort. There are *developmental obese* children and adolescents, who are overly concerned with their size, yet fear the possibility of becoming small and weak. Finally, there are *thin-fat* people, who have lost weight but continue to view themselves as overweight (p.228). Her descriptions were relevant to this research project because these problems were characteristic of some of the concerns listed on the EDI-2 scales, such as bulimia, binge eating, impulse regulation, body dissatisfaction, and drive for thinness.

Excessive Eating, Dieting, and/or Exercising

One final group of eating problems to consider was that of excessive eating, dieting, and/or exercising. The key aspect here was that one's behavior was excessive to the point of being called an addiction; and, consequently, treatment was recommended based on the principles of Alcoholic Anonymous (Orford, 1985). People with these "excessive" problems may also have had some of the behavioral symptoms characteristic of the eating disorders, AN, and BN, as well as some of the other eating problems. Excessive eating, dieting, and exercising might be characterized as a potential precursor to an eating disorder or as a subclinical eating disorder, given that a person has some of the symptoms but not all.

Physiological and Psychological Aspects of Eating and Eating Disorders

Tessier (1993) examined eating disorders and a range of eating problems with theoretical and qualitative analyses and suggested that eating problems should be viewed as occurring on a continuum with the eating disorders. This approach was also supported by some researchers who claimed that strict adherence to clinical diagnostic standards could result in delayed treatment and limited understanding of the precursors to eating disorders. Garner, Olmstead and Garfinkel (1984) and Nylander (1971) placed a clinical or severe eating disorder, which they described as life threatening, at the extreme end of the continuum. Hsu (1990) recognized a continuum in which dieting is at one end of the continuum and AN is at the other. Gleaves, Lowe, Snow, Green & Murphy-Eberenz (2000) indicated that many researchers who have evaluated continuity and discontinuity eating disorder models had produced inconclusive results.

It appears that many researchers are still in disagreement regarding diagnostic and categorical approaches that should be taken with eating disorders. Nevertheless, a continuum approach was considered appropriate when one's objective is to include a range of behaviors, body shapes, and the degree of threat to life in part of a diagnosis. For this present research, the continuum perspective was helpful to keep in mind for studying the prevalence of disordered eating behaviors and attitudes in the general population. As well, because both males and females were studied, male cases could potentially be excluded if diagnostic standards are based on symptoms that characterize eating disorders in females. For example, the *DSM-IV* (1994) diagnostic criterion of amenorrhea for AN does not apply to males.

Furthermore, it was proposed that in any research study or clinical treatment in which one considers subclinical presentation and/or precursors to an illness as well as the illness itself it is also important to understand the converse: normal and healthy functioning. Essentially, a continuum perspective is inclusive, and healthy behaviors can be compared to problematic behaviors. Following is a summary of normal and healthy eating processes in which socially learned behaviors and physiological components of eating are discussed. Various biomedical, sociocultural, and psychological explanations and approaches to eating disorders are then reviewed.

Eating as a Natural Body Process: Explaining Physiological Components

In any discussion of eating disorders given to the general population, it is essential to describe what the baseline "normal" behavior is. This is probably most true for youth, because they are potentially more susceptible to external influences. Schoemaker (1998) cautioned people who conduct screening or provide prevention programs for eating disorders to be aware that they may unwittingly suggest the wrong ideas to healthy people. He cited cases in which people started exhibiting disordered eating behaviors such as vomiting and use of laxatives following their doctor's questions regarding eating disturbances (p.201).

At the outset of the eating disorder presentations given to the Whitehorse students who participated in this research project, this researcher provided them with Tim Hortons Timbits. As they ate the Timbits, there was a discussion of the normal aspects of eating. In particular, we focused on the taste and texture of food, the physical and emotional feelings induced, and memories evoked while eating. The Whitehorse students responded positively to this discussion. They volunteered examples of how feelings and memories were induced by certain foods and smells of food. They also provided examples of when they ate food in response to strong emotions such as sadness, excitement, anger, and boredom. The approach used with the eating disorder presentations was characteristic of the approach taken in the following literature review: to discuss first the healthy aspects of eating, and then to provide information regarding the physical, psychological and social aspects of eating disorders.

Hunger and Satiety

When and how much a person eats is determined by a complex interaction of innate and learned responses. Physical hunger is considered the initial and primary instigator involved in the start of a meal. It is produced by metabolic signals, which are triggered when stored nutrients are depleted. The detectors for these signals are located in the liver and brain. Social factors are equally involved in hunger. For example, one might experience hunger in reaction to a number of situations, such as the presence of appetizing food, the company of people who are eating, or even the words, "It's time to eat." Furthermore, people often eat in the absence of a need for food, such as when they are feeling emotional or bored. Geneen Roth (1982) has written extensively on the tendency for people to confuse emotional needs with hunger. Her therapeutic approach is to encourage people to recognize and differentiate between physical and emotional hunger.

A person should stop eating when the need for food is satisfied. This involves both biological satiation processes and socially learned cues. Biological processes are initiated by a number of metabolic signals. For example, portion sizes are affected by the feedback one receives from the digestive system and from neural and hormone changes (Shils & Young, 1988). As with the instigation of hunger, the ability to stop eating is also attributed to learned responses. Thus, when food is familiar, a person eats what he or she has learned to be a proper amount.

The explanation of the natural physiological mechanisms of hunger and satiation is a starting point by which to consider eating disorders. Eating problems and eating disorders are a deviation from a natural process of ingesting, digesting, and establishing metabolic rates. Whether one is researching the topic of eating disorders or treating individual clients with eating disorders, an understanding of the innate wisdom of the body is essential.

Biomedical Factors of Eating Problems and Eating Disorders

A brief overview of research regarding the biomedical factors of eating disorders was included in this literature review for a few reasons. First, it was considered important to be aware of the body processes that are involved in eating, eating problems, and eating disorders. Second, because there is a range of treatment methods and theories regarding eating disorders and integration of these into multidimensional approaches are recommended to treat all aspects of an individual. Third, when the classes on eating disorders were presented, the Whitehorse youth who participated in this study were provided this information at an age-appropriate level. The information was used as a basis for discussing how one can reduce the risk for eating disorders with proper diet, nutrition, and exercise.

Hormones

Hormones trigger cessation of eating and slow or speed up chemical reactions in response to food (Gonzalez and Deutsch, 1981). Hormones have been identified as key players in regulating weight; and when there is an imbalance or malfunctioning of hormones, they have been attributed to obesity, compulsive eating, bulimia, and anorexia (Carlson, 1986).

The key point in considering hormones when discussing eating disorders was the awareness that there is a delicate balance of regulatory mechanisms that can be upset. For example, eating disorders have been known to occur secondary to diabetes mellitus, which is related to abnormalities in the insulin-glucagen system (Steiner, Sanders, Ryst, 1995). Essentially, hormones are affected by one's nutrition, level of stress, menstrual cycles, growth spurts, and affective state. In short, there is a cyclic chain of interaction: hormones affect behavior and in turn are affected by behavior.

Understanding the role of hormones in developmental changes was helpful when explaining and treating eating disorders with youth. At puberty, there are changes in endocrine status; as a result, the youth's metabolism and related neural mechanisms involved in hunger and satiety are altered. Wade and Gray (1979) studied laboratory animals and found that food intake and body weights are modified by the hormones progesterone and estradiol. If one were to extrapolate from these findings, one could surmise that the adolescent boy or girl might be physiologically motivated towards abnormal eating or dieting because the hormones progesterone and estradiol are drastically affected during this period of growth.

Hypothalamus

Discussion of the hypothalamus was included to emphasize the need for medical assessment, particularly in cases in which lesions are implicated in disordered eating. In addition, it was contended that awareness of the interaction between the brain and other hormonal and bodily processes allows one to recognize the interplay of biological and psychological factors of eating disorders.

Those who have investigated the role of the hypothalamus have reported that lesions in the hypothalamus are linked to occurrences of dysfunctional eating or digesting (Carlson, 1986). Essentially, the normal relay of messages associated with healthy ingestive behaviors can be obstructed by lesions. Consequently, the body is unable to utilize food as a fuel, and there can be either overeating and obesity, or lack of eating (Gold, 1973 & Jones, Sawchenko, Hetherington & Ranson, 1939 & Kapatos, 1977).

The work of researchers in the area of psychophysiology and neurology who have noted the role of biology in eating disorders is even more relevant to this research, which was conceived primarily as an investigation into the psychological and social aspects of disordered eating behaviors and attitudes. As a result of these studies, preexisting conditions and the residual effects of an eating disorder on the brain were explained. Seeger and Lehmkuhl's (1993) study was relevant to this present research because the reciprocal roles of one's body image and one's emotional state were demonstrated.

Seeger and Lehmkuhl (1993) examined 10 adolescents with AN and 10 age and cognitively matched normal controls for reactions to the presentation of emotional stimuli by providing a random sequence of visual depictions of thick and thin models. They found that adolescents with AN showed shorter reaction times and prolonged latencies of P300 at left frontocentral sites when presented with the emotionally high-loaded stimuli (pictures of a thick female silhouette). They suggested that low-weight AN patients may have had a body-image-related deficit in neuronal processing at the frontocortical area of the brain when there is a stimulus with a high affective load. This finding was interesting in light of the characteristic "fear of fat" and resistance to feeding that persons with anorexia exhibit once they start to gain a little weight.

In a similar line of reasoning regarding the impact of an eating disorder on thought and emotions, Casper and Heller (1991) concluded that the adolescent's increased capacity to acknowledge negative affect during weight gain may be due to enhanced activation of the right hemisphere. They also offered this as an explanation for the reluctance of a restricted eater to return to normal eating behavior and former weight. Their ideas were engaging, especially in light of the fact that depression has often been associated with eating disorders and effectively treated with antidepressant medication (Garner, 1991). Rothenberger, Dumais-Huber, Moll, and Woerner (1995) speculated that adolescents with anorexia might suffer from some transitory frontal lobe deficitthat can have an impact on their ability to adequately evaluate their body size and health. They concluded that because neuronal deficits are closely related to body weight and eating behaviors, a primary therapeutic objective must be to increase body weight if somatic and mental functions are ever to be restored (p.215).

Serotonin

Serotonin is an inhibitory neurotransmitter substance that has received much attention and has been linked to problems with sleep, eating, aggression, and depression. Researchers have not clearly described serotonin as a primary concern in the eating disorders. However, it appears that it is a treatable factor: clinical trials with antidepressant medications have been proven effective for both depression and bulimia (Garner, 1991; Hsu, 1990 & Crisp, 1980). Interesting findings regarding the divergent reactions of male and female adolescents to low serotonin levels have been noted. Alper (1986) identified low serotonin levels in girls with BN and AN, and in boys who were delinquent and suicidal. It appears that serotonin levels, as well as hormone levels, were implicated in the expression and type of illness one presents with. Furthermore, one's biology and psychology is affected by the societal expectations for males and females.

Metabolism

The concept of metabolism has received a great deal of interest, especially from persons interested in altering their body's metabolism in order to burn calories. A key concept linked to metabolism is the basal metabolism rate, which is referred to as BMR. There is lack of agreement regarding the likelihood that metabolism rates are inherited. Halmi (1978) suggested that because the person with anorexia has engaged in prolonged fasting and/or use of laxatives there is an effect on his or her metabolism rates. He further stated that it is difficult to tease out the hereditary differences in causation from the physiological consequences of starvation, laxative use, or restricted eating.

Shils and Young (1988) described and attributed the BMR to five influences: body surface area, thermodynamic efficiency of the body, the hormone thyroxin, the type of fuel (food) ingested, and the type of activity in one's life. Given that food consumption and activity are conscious and not autonomic behaviors and are at least two of the factors involved in one's BMR many people have reasoned that they can train their body for a more efficient metabolism. This reasoning has been applied and used both successfully and unsuccessfully by dieters. A severe reduction in food intake or ingestion of food that does not fulfill the body's energy requirements can result in a less efficient metabolism. In fact, many people who have dieted for years claim that although they lose weight during a diet, they regain it and more when they stop dieting.

The body requires a certain amount of energy to maintain the body processes. Exercise is considered an important part of the energy balance equation. Garrow (1978) noted that one's BMR drops with underfeeding. Orford (1985) explained the BMR phenomenon: "This represents a rudimentary control system such that when energy supply is reduced expenditure falls, tending to protect energy stores from excessive depletion" (p.79). These facts are interesting to consider with respect to the person with activity anorexia as described by Epling and his colleagues (1991). An individual with activity anorexia exercises more and eats less and thus lacks protected energy stores. Ultimately, important muscle and protein tissue instead of fat becomes depleted when one does not maintain the energy balance equation. Another factor regarding BMR to consider is the gender differences in muscle mass. The female body has a larger percentage of body fat than does the male body; therefore, the male may be better able to maintain an efficient metabolism.

In the class given on eating disorders to the participants in this research project, a car running more smoothly because its oil and fuel levels are maintained was likened to the body's ability to burn calories more efficiently if food levels are maintained. This example was used to help the youths visualize the metabolic processes that they can control with: activity and diet. A parent of a teen who had attended this class reported that it was a positive experience for this teen because she realized that if she ate regularly and sensibly she could manage her weight better than if she dieted (Personal communication, 2000).

Some researchers implicated disturbances with the metabolic functions involved in hunger, satiety regulation, mood regulation, and impulse control to the effects of eating disorders. Brantner-Innthaler, Nasserbakht, Shih, & Steiner (1994) found metabolic disturbances after weight rehabilitation with an adolescent sample they studied. According to their results, the adolescents with restrictive anorexia required the most calories to maintain their daily weight, while patients with bulimia required the least. They added that these differences were apparent for several months and contended that their findings could be applied to greater understanding and recognition of the pre- and post-morbid characteristics of eating disorders.

Genetic Predisposition

Genetic models have been considered in the explanation of a range of somatic and psychological problems. According to the genetic approach, to have a genetic predisposition to an eating disorder is not necessarily to be born with one but to be vulnerable to exposure and mitigating circumstances. There were problems with adopting this model to explain eating disorders. First, there is little chance of substantiating claims of hereditary causes because it is impossible to separate the biological and environmental factors involved. Second, the treatment is limited to avoiding exposure of risk factors. Hsu (1990) reviewed data on twin studies and found a greater concordance rate for monozygotic twins than dizygotic twins with AN. However, he also stated that these rates are suggestive of a genetic predisposition to an environmental induction process in the pathogenesis of an eating disorder.

There were inconclusive findings regarding inherited factors of AN, BN, and other eating problems (Bruch, 1973; Christianson, 1929; & Griffiths & Payne, 1976). This researcher conceptualized the interaction of genetics and environment in a "domino-effect" progression, in which one's inherited physical size is involved in one's eating behaviors and attitudes. Essentially, for the first domino, the balance is tipped when one has inherited a large body shape and as a result engages in excessive dieting (possibly to conform to a thin societal standard). The second domino is the consequences of excessive dieting, which are a less effective metabolism and greater weight gain. The third domino in this series is the desperate attempts to lose weight that follow further unhealthy dieting and excessive exercising. This progression of frustration with unsuccessful weight control efforts despite increasingly drastic measures might potentially result in an eating disorder.

Set Point

The nature versus nurture controversy over what affects one's body size was premised on the debate of whether one inherits a ratio of fat cells and a "set" weight to which one's body naturally returns after a diet or if one develops that set point through eating behavior. Set point is generally described as the weight and level of fat tissue to which one's body naturally returns after periods of dieting.

Shils and Young (1988) noted that there are three developmental periods when body growth velocity is highest, hence these may be times when the development of the percentage of fat cells or adipose tissue are set. Interestingly, these growth periods occur during periods when a person would be vulnerable to overeating: the final trimester of pregnancy (wherein the mother's unusual eating habits are responsible for the neonate's increased fat ratio), during the first two years of life, and during adolescence.

What is of further interest to note is that during the body's high growth stages of infancy and adolescence, the corresponding cognitive and emotional processes are operating at peak levels. Throughout development, the child is focused on learning about self and about his or her world; however, identity issues are especially paramount during the adolescent growth periods. At that time, there is a reciprocal relationship occurring: eating behaviors are affected by thoughts and feelings regarding identity, and one's fat ratio and set point are fixed by these eating behaviors. In other words, if a youth is unhappy or overwhelmed, he or she may overeat, and thus his or her fat ratio is affected.

Set point is not only determined by periods of overeating but also by type of diet. This means that during key growth spurts, a high fat diet is implicated in the increases of fat ratio and the body set point. Understood this way, set point theory can be applied to explain a situation in which developmental processes, as well as the modifying influences of emotions on eating, are determining factors in one's body fat ratio.

Whether one's set point can be attributed to hereditary factors or to eating habits during critical developmental periods is unsettled. However, what appears to be true is that set point is a determinant in one's weight and diet control throughout life. Ley (1980) reviewed findings and supported this conclusion. He found that overweight people consistently regained their former weight despite continued dieting and that low weight people could not gain weight no matter what or how much they ate.

Stress and Physiological Reactions

Stress has been identified as a factor in overeating and in the refusal to eat. Bruch (1957) described several of the young patients she treated who had started overeating in response to a stressful family environment. The factor of stress has been observed in this researcher's clinical work. Some clients have indicated that the end of a stressful workday was the time they were most likely to binge. In addition, some stated that bingeing was a coping strategy that they missed once there was a reduction in the frequency of bingeing and purging. One client reported that she did not know what to do with the emotions that arose in the absence of her binge-purge coping strategy.

Dysfunctional eating behavior in reaction to stress is not limited to our complex and demanding era. Brumberg (1988) followed the history of several girls in the 1800s with anorexia and documented how they reacted to familial coddling and societal constraints commonly experienced by females at that time. She reported that starving behavior was often triggered in response to a traumatic or stressful event.

She characterized this as a psychological and physical interaction: With environmental stress there is emotional arousal, and subsequently there are corresponding neural and endocrine changes involved in the modification of eating behavior.

Rowland and Antelman (1976) implicated stress as a primary factor in the overeating situation. Through their research, they found that rats whose tails were pinched during two daily sessions increased their caloric intake by up to 129%. Another possibility with regard to stress is that the body is put into the stressful condition of starvation by poor eating habits. The body recovers and prepares for further potential starvation by storing and converting food to fat stores. There is a survival component to this type of regulatory mechanism. It is likely that when our ancestors were exposed to starvation they survived because of the increased level of eating that occurred once they found food and also because food absorption was a primary directive of their biology. Also, in association with this rationale, differences between weight gains experienced by males and females could be attributed to the biological needs of pregnant females who require an increased fat ratio in order to withstand stress and cold and to carry a baby to term and lactate.

In summation, stress was figured into the eating disorder paradigm as a survival mechanism. In situations of psychological and emotional stress, one uses food consumption or food denial as a coping strategy. In situations of physiological stress such as starvation, one's body copes and survives by absorbing and converting the food into fat stores.

Addiction Model

The addiction medical model is usually used to describe drug addiction or alcoholism. Orford (1985) suggested that an excessive appetite or overeating might be conceived in this way. This suggestion was based on the phenomenon of food craving resembling other addictions. For some persons with an eating disorder, their experience is like the experiences of people in a state of addiction or dependence in which they are overwhelmed by an uncontrollable craving and acquire a sort of habituation to overeating. In the EDI-2 questionnaire administered to the students in this research project, there was recognition that a problem with control of impulses is characteristic of an eating disorder. There are three scales that incorporate some of the problems with food addiction. These are called the *Bulimia*, *Impulse Regulation*, and *Interoceptive Awareness* scales.

Eating disorders may also share similarity with drug and alcohol addictions in that there is the possibility of a genetic biological predisposition. In other words, whether you become addicted to food or drugs, there is a biological vulnerability to become addicted. To support this finding, researchers have identified links to alcoholism and manic depression in families of persons with bulimia (Garner, Garfinkel, Schwartz & Thompson, 1982).

There are some compelling reasons for applying an addiction model to eating disorders, such as looking for causal factors and utilizing treatment approaches. However, there are also problems. Food is a biological necessity and thus differs significantly from other substances used by addicts. As well, some of the pessimistic prognoses for addictions are based on chemical dependency; yet the only known relationship to chemical dependency of eating disorders is the release of endorphins that result from starvation and exercise. Moreover, some foods such as chocolate have been attributed to the release of "feel-good hormones." However, in light of the parallels found in these behaviors of excess, and the consequential bodily damage incurred with them, a conceptual bridge between the addictions and eating disorders is important for the development of more progressive and effective treatments.

A final compelling rationale for considering parallels between disordered eating habits and addictions is in the experience of overeating. Essentially, people with eating disorders or subclinical eating problems may be on a "rollercoaster" of gaining and losing weight all their lives and many seem unable to free themselves from preoccupation with food. Recognition that this is a similar struggle for addicts was apparent in organizations such as Overeaters Anonymous, which are based on the principles of Alcoholics Anonymous. Generally, descriptions of how the body "gets hooked" and how one can be treated are found in addiction models. There appears to be both a "body addiction" and a "behavioral addiction" element to eating disorders.

Biomedical explanations and approaches that are considered in connection with eating disorders are included here to underscore the importance of identifying physiological factors and to acknowledge the interaction of physical factors with social and psychological factors. In the following sections, I discuss the social and psychological explanations and approaches taken with regard to eating disorders.

Sociocultural and Psychological Explanations for Eating Disorders

There are several ways to illuminate the impact of sociocultural and psychological factors on eating problems and eating disorders. One could outline the historical and current sociocultural effects in a manner similar to the way Brumberg (1988) does. One could analyze psychological constructs and theories such as perfectionism, boundaries, and learning and behavior theory, to name a few, and relate how they are relevant to understanding the functioning of self and society with respect to eating behavior (Tessier, 1993). One could also review feminist explanations for reasons why eating disorders are more common in the female populations (Orbach, 1993;Woodman, 1980; & Wolfe, 1990).

Ideally, one's approach to dissemination of knowledge is congruent with the objectives of the research. In this research project, the primary focus was to investigate the prevalence of disordered eating behaviors and attitudes. The EDI-2, a well-known psychometric instrument, was used to obtain measures of the following constructs: *drive for thinness, bulimic behavior, body dissatisfaction, impulse regulation, social insecurity, maturity fears, aestheticism, interpersonal distrust*, and *ineffectiveness*. These constructs were primarily derived from psychological and sociocultural factors. Therefore, in this discussion, approaches that pertain to psychological and sociocultural perspectives of eating disorders are presented. As well, there are historical descriptions of eating disorder occurrences in order to illustrate the interaction of society and psychology and their possible effects on the self.

Sociocultural Explanations and Approaches

A predominant theme when considering sociocultural factors was one of society affecting the individual. Philosophers claim that we truly only become human through socialization. Whether we are "animal loquens" as described by Ernst Cassirer (1976) or "socialized individuals" as described by Lev Vygotsky (1986), it seems clear that the individual's thoughts, behaviors, and emotions are in part affected by society. A sociocultural perspective is comprehensive in the sense that one can consider the impact of several societal and cultural variables involved in eating disorders, such as the effects of family and peers, and the peripheral effects of school, media, workplace, and the economic or power structures of government. A predominant goal taken with a sociocultural perspective is the exploration into how individuals act, think, and learn in the social aspects of their lives.

There is general agreement in the many arenas of psychology, sociology, and philosophy that society influences an individual from infancy to death. The roots of the "society effect" start with the "eating" infant who develops not only physically but also socially and emotionally when fed. Erikson (1963) proposed that related psychosocial needs such as security and love are attained in the nurturing process of feeding. When the psychosocial needs are fulfilled, the child develops a resilient self-esteem and can confidently explore his or her world. Maslow (1968) conceptualized human needs in a hierarchy and specified that one's most basic needs are food and security. Mitchell (1973) summarized that the psychological needs fulfilled during infancy and adolescence are: needs for affection, security, acceptance, self-respect, achievement, recognition, independence, and order. Overall, these needs are considered necessary in order for the child to actualize potentialities. Essentially, the early eating scene of nurturing interactions between infant and parent is the foundation for a plethora of emotional development.

Beyond the importance of nurturing, and the representative power of food on the child, social eating behavior rules are also acquired. During meal times, a child learns the rules of sharing, etiquette, and conversation. Healthy and natural eating conditions are considered important not only in meeting the biological needs of the child, but also in presenting opportunities to develop trust and to bond with his or her family and to learn social rules and interactions.

Empirical and theoretical researchers have noted how gaps in the simultaneous satisfaction of one's biological, social, and psychological needs are involved in occurrence of eating disorders (Sours, 1980; Griffiths & Payne, 1976; &

Rosiechuk, 1987). Steinhausen, Boyadjieva, and Neumarker (1995) reviewed and cited researchers who identified sociocultural factors in the etiology and maintenance of eating disorders (DiNicola, 1990a & 1990b; Garfinkel & Garner, 1982; Garner, Garfinkel & Olmsted, 1983). They summarized from these sources and cited the following conclusions:

> (a) there is a female predominance; (b) middle and upper classes are more frequently affected; (c) the incidence is increasing; (d) there is a development gradient across cultures in this type of Western illness; (e) certain types of occupation such as dancers, models, or athletes carry a greater risk; (f) developmental, family, social and cultural factors serve as predisposing elements, and (g) life stress events function as precipitating factors (p.37).

Because of the several factors identified with eating disorders, many practitioners and researchers of eating disorders now recognize the necessity for multidimensional approaches (Russell, 1986, & Garner, 1991). A multidimensional approach is described as one in which physical, emotional, social and psychological factors are acknowledged and addressed. These factors are discussed in the following sections in order to illustrate how historical and current sociocultural factors are applied to eating disorders.

Historical Accounts of Eating Disorders

By drawing upon historical accounts of eating disorders, one is able to trace the evolution of the perception of the body in society. There are several historical accounts of women with eating disorders; this is primarily because there are fewer instances of eating disorders in males throughout time. Nevertheless, there are some early occurrences of eating disorders in males documented by Morgan (1694) and Gull (1874). In addition, researchers have indicated increasing numbers of eating disorders in males (Anderson, 1985; Crisp & Tom, 1972). For the most part, however, it is generally agreed that there is a greater impact of society on the female identity than on the male identity. Feminists such as Morgan (1984), Freedman (1988), and Friedan (1986) and other researchers such as Brumberg (1988) have described the historical and current impact of society on the female body.

Brumberg (1988) provided an account of the female's drive for thinness throughout history. She contended that women have used control of appetite, food, and body to communicate their frustrations. She also suggested that the meaning of self-imposed starvation has changed. Eating disorders were noted as occurring in the context of aesthetic, altruistic, and religious statements. For example, St. Catherine of Sienna, who lived during the Middle Ages, existed on a handful of herbs each day. Ross (1992) described altruistic motivations for starvation in the early Aboriginal hunter-gatherer society. He reported that the aged and infirm would voluntarily walk off into blizzards to die when food was in short supply so that the younger generation could survive. There is limited historical documentation regarding instances of bulimia; this is likely due to the differences in the two eating disorders. The AN symptoms of abstinence and self-starvation are more politically drastic than are the BN symptoms of overeating and purging.

The few historical accounts of persons with bulimia were gathered from inferences made from depictions of earlier eating practices in film and literature. In the Fellini-like films of Ancient Romans, characters were shown eating excessively and then using vomitoriums to purge the food. Visser (1992) cited Erasmus (1530) in his treatise *de civilitate* and concluded that bingeing and purging occurred and was judged negatively in earlier times. "Withdraw when you are going to vomit; vomiting is not shameful, but to have vomited through gluttony is disgusting" (p.67).

Susan Orbach (1993) is a psychotherapist who works in the area of eating disorders. She suggested that the present-day fascination with eating disorders is a potential factor in the increased prevalence of bulimia. According to her, some desperate dieters learn about weight-management strategies from eating disorder literature or presentations and embrace the dangerous weight control measures such as purging and the ingestion of laxatives and ipecac.

Laverty (1995) outlined the progression of eating disorders in women and related their occurrence to art and fashion dictates. She reported that artists throughout time, especially during the Renaissance, "…modified the characteristics of the female body, while the depiction of the male body remained constant. They were either Herculean, muscular and massive, or Apollonian, blonde and lissome" (p.10). She stated that such dictates of fashion on the body started most notably in the 18th century, a time when the body was altered to fit the fashion because of the introduction of mass production of clothing. In other words, women had to alter their body size to fit the clothes, whereas in former times the clothes were altered to fit the women.

Today, eating disorders are more often attributed to media influences and societal idealization of the thin body. Wolfe, (1990, 1997) in her books *The Beauty Myth* and *Promiscuties*, contended that some women submit themselves to rigorous diet and surgery to achieve the ideal beauty image. This is a dangerous practice because societal perception of beauty changes. For example, the average Miss America contestant's weight has dropped from 134 pounds in 1954 to 117 pounds in 1980. As well, the average female model has 25% less body weight than the average North American female. In school programs such as the *B.C. Eating Disorders Curriculum* (1999), there is acknowledgement of societal effects on one's drive for thinness and body dissatisfaction. For example, included in the lesson plans are activities in which the students are encouraged to critique magazines and media for misleading and destructive body image messages. Levine and Smolak (1998), who have researched the effectiveness of eating disorder prevention programs, also emphasized the need to include instruction on media analysis.

2

Family Factors in Eating Problems and Disorders

Family factors have been considered in both the historical and recent research on eating disorders. The following is a review of the research that is intended to investigate the relationship between eating disorder onset and maintenance, genetic factors such as family traits, and comorbidity within families. In addition, the eating disorder research with regard to family dysfunction and family culture are reviewed.

Familial aggregation has been noted in studies of persons with both AN (Strober, Lampert, & Morrell, 1990), and BN (Kassett, Gershon, & Maxwell, 1989; & Hudson, Pope, & Jonas, 1987). Researchers of the concordance rate for AN and BN in twins found convincing results: There is a higher rate of incidence for monozygotic twins than for dizygotic twins (Holland, Sicotte, & Treasure, 1988; Kendler, MacLean, Neale, Kessler, Heath, & Eaves, 1991). Steiger and Stotland (1995), who cited this research, cautioned that the concordance rate is more evident with AN than with BN (p.55).

The hypothesis that a person is more vulnerable to an eating disorder if there are mood disorders or related psychological disturbances in a family member has long been a controversial topic in the research. In support of this hypothesis, Piran, Kennedy, Garfinkel, and Owens (1985) conducted controlled studies of lifetime prevalence of mood disorders and reported that many of their subjects had relatives with an eating disorder. On the other hand, researchers such as Kassett et al (1989) and Strober et al (1990) related that it is more often the case that the probands themselves, not their families, have the mood disorders. One final proposal, which is still debated, is that the family-genetic effects involved are inherited traits such as perfectionism, which is often characterized in the profiles of individuals with eating disorders (Crisp, Harding & McGuinness, 1974; Garfinkel, Garner, Rose, Darby, Brandes, O'Hanlon, & Walsh, 1983; & Casper, 1990).

Family dynamics have also been studied for their effect on the presentation of an eating disorder in a son or daughter. Earlier in this century, Margaret Mead (1940) observed that the American middle class child-rearing practices are premised on conditional love. She described the situation as the following: "Parents show affection when their child outstrips another in competitive enterprises and become disappointed and distressed when their child lags behind others" (p.45). This type of family dynamic could very likely set in place a pattern of perfectionism and instill feelings of ineffectiveness. Perfectionism and feelings of ineffectiveness are two factors related to eating disorders. These constructs are included as scales on the EDI-2.

The concept of a "family culture" of concerns around body image, weight, and eating has also been postulated in eating disorder research. There have been inconclusive findings regarding family culture and eating disorders. Hill, Weaver, and Blundell (1990) and Pike and Rodin (1991) identified a link between a mother's eating attitudes and the influence she has on a daughter's beliefs and behaviors around eating. Researchers who work with clinical samples have related that they found parents of eating disorder sufferers who present with both normal and abnormal eating attitudes (Hall, Leibrich, Walkley, & Welch, 1986; Garfinkel et al, 1983; Hall & Brown, 1983; & Wold, 1985).

Families with a child, teen, or young adult with an eating disorder have been studied in order to identify patterns of interactions. Steiger and Stotland (1995) described families of children with anorexia as "enmeshed, conflict-avoiding" families who "limit autonomy" and who have "oedipally-tinged"alliances. These researchers based these descriptions on their findings and on collaborative examples they found in their research (Owen, 1973, & Houben, Pierloot, & Vandereycken, 1989). For example, Owen (1973) noted instances of mothers of anorexics who were overly identified with their daughters. In addition, Houben et al (1989) described family patterns of eating disorder patients: Many had strong attachments to mother and father-daughter boundary problems. Families of children with BN were described as "incohesive, disengaged, high in conflict, and limited at expressing feelings, and with destructive over involvement in their children's lives" (Wonderlich, 1992; & Johnson & Flach, 1985). These researchers contended that the greater the degree of family dysfunction, the greater the severity of BN symptoms.

The differences that exist between restrictor-binger eating disorder types have also been studied with respect to family dynamics. Steiger and Stotland (1995) summarized the findings from these studies. They stated that there are "two broad and opposing tendencies – one linking dietary restraint to familial enmeshment and conflict avoidance, the other linking symptoms of bulimia to open conflicts and hostilities" (p.61). These tendencies were noted in some of the family differences found between the families of persons with anorexia or bulimia.

Peer Factors in Eating Problems and Disorders

Peer group behavior and influence have been found to be important socializing agents in many arenas of one's life, especially during adolescence. Erikson (1963) described adolescence as a period of growth in which either role identity confusion or role integration occurs. It is very likely, then, that group pressures are involved in an adolescent's behavior and self-evaluation. Given the findings of eating disorder onset during this developmental period, an awareness of the impact of peer influences is important and necessary (Garner, 1991; Steinhausen, 1995 & Vandereycken & Noordenbos, 1998).

In the following sections, the impact of peer influence on eating disorders is accounted for in three areas of functioning: group deviancy or conformity, gender roles, and the effects of peers on social confidence and self-esteem.

Group Deviancy or Conformity

Rubington and Weinberg (1968) described deviancy theory to account for behavior that involves breaking societal rules. This behavior might also be considered an important contributor to one's development because identity formation necessitates breaking away from the social norms of parents. This phenomenon is particularly notable in the adolescent's need to develop fashions that are different from the adult population. Deviancy theory can be applied to eating disorders, particularly because "body image" is one aspect of an individual's identity.

Both starving and bingeing have been identified as deviations from normal eating behavior. Which behavior occurs seems to depend upon one's relative identification with the peer group. In the arena of food, finding a group that one can identify with, and share one's eating and dieting behaviors, is a factor in reducing the stigma of deviation from the larger population. In this way, deviancy is a matter of social definition: one conforms to the peer group and deviates from another, larger group. For example, Paxton and Schutz (1999) found that youth in cliques that ranked high in body image concerns and dieting behaviors manifested these concerns in ways consistent with a weight/shape-preoccupied subculture. In addition, Tessier (1993) found that group identification with peers that have similar disordered eating behaviors and attitudes often involved sharing methods of purging, such as vomiting together and discussing effective laxatives.

Another aspect of group conformity or deviancy to consider is the peripheral effects of peer "role-models" portrayed in the various forums of media. Magazines, television, newspapers and movies are considered influential contributors to the conformity to a prescribed body image. This was particularly apparent in youth that identify with role models and modify their eating and exercising behavior. Judith Rich Harris (1998) wrote the controversial book *The Nurture Assumption*, in which she addressed the topic of peer influence. She suggested that children are more affected by their peers and the peer role models they view in media than they are by parents and other authority figures. Relevant to the hypothesis that adults play a minimal role in an adolescent's behaviors and attitudes, Levine and Smolak (1998) reported disappointing results from eating disorder prevention programs that are didactic in nature and are taught by adults. They recommended use of a participatory approach in order to facilitate greater interaction among peers on topics of healthy eating and dieting.

Interaction of Gender Roles in Eating and Dieting

It is generally understood that teenage girls and women share their food interests and dietary habits and concerns more than men do. Food preparation has historically been the domain of the female; therefore, a degree of preoccupation is expected, especially if female teens identify with female role models and peers. This in itself is not a destructive activity; however, girls with eating disorders go beyond healthy preoccupation and exhibit abnormal behaviors and attitudes regarding food and thinness and couple their self worth with their body size.

The female diet and image concerns have been documented in several studies and have been accounted for in several different ways (Byrne, London & Reeves, 1968; Centers, 1972; Guy, Rankin & Norvell, 1980 & Deaux & Hanna, 1984). Herman and Polivy (1980) found that women weigh themselves more often than men. Mori, Pliner, and Chaiken (1987) noted that contemporary American women are more concerned with body weight, food, and eating than are men. Mori and his colleagues contended that women exhibit heightened preoccupations with weight and dieting because of the propensity in our society to equate a woman's attractiveness and success with thinness. In their research, they discovered gender biases in perception of masculinity and femininity. Essentially, both male and female subjects rated a male normal-weight silhouette as most masculine but rated only the thin-female silhouette as most feminine. Following these research findings, Mori and his colleagues conducted a further study regarding the relationship between one's eating habits and the effect of self-image and beliefs about people's perceptions of feminine attributes. They found that women ate less when motivated to present themselves in a feminine light, especially when they were in the company of an attractive male, but found no similar pattern with males. Their findings were interesting to consider because they are prime examples of how gender differences regarding food, body image, and diet are enacted.

Psychological Factors and Approaches

There is little doubt that a societal obsession for thinness exists in North America. It is especially apparent in females. It also is evident that eating disorders occur more frequently in females than in males. Given these conclusions, many researchers have been led to investigate the gender differential and in doing so have noted the distinctly different impact of social and psychological forces on males and females. It appears that the female individual internalizes societal body images more than the male individual does. In this section, I discuss potential psychological factors involved in such adherence to societal standards as well as other psychological factors that are notable in the occurrence of eating disorders.

Explanations regarding psychological functioning have long been contemplated in several different disciplines. Three primary areas of psychological functioning that have undergone a great deal of scrutiny by eating disorder researchers are personality traits, cognitive styles, and attachment patterns. In the realm of personality, it appears that the general risk profile symptoms for anorexia are anxiety, obsessiveness, perfectionism, and overcompliance (Crisp, 1980; Casper, 1990 & Cooper & Fairburn, 1985). The risk profile symptoms for bulimia was described as emotional lability, depressed mood, and counter-phobic independence (Garner, 1991; Hsu, 1990; Cooper & Fairburn, 1986 & Anderson, 1988).

Adolescents with eating disorders have difficulty with certain cognitive tasks, such as conceptualizing realistic images of their bodies and forming appropriate attitudes regarding the mastery of their bodies (Rosenbaum, 1993 & Frielander, 1990). In the area of attachment, Steiner, Sanders and Ryst (1995) explored issues of separation and individuation and found that they are related to an anorexic adolescent's fear of growing up and becoming independent. Discussion of the personality and cognitive styles and attachment patterns is integrated into the following discussion of psychological topics often investigated in the eating-disorder research: self-esteem and social confidence, perfectionism, body image, and separation and individuation concerns.

Self Esteem and Social Confidence

Rosenberg (1989) proposed that there is heightened awareness of self-image in adolescence. He stated that adolescence is a time of major decisions, especially in late adolescence, when one asks, "What will I do" and/or "Who will I be?" As well, it is a time of exceptional physical and psychological changes in which the adolescent's picture of self is "shaken up"(p.4).

There is little doubt that adolescence is a time of identity issues, particularly those that that are involved in one's self esteem and social confidence. Researchers who have focused their efforts on understanding the role of self-esteem in eating disorders distinguish gender and age as key factors. Button, Sonuga-Barke, Davies & Thompson (1996) investigated the role of self-esteem in the etiology of an eating disorder. They administered self-esteem questionnaires to 594 girls between the ages of 11 and 12, and followed up 3 to 4 years later with questionnaires intended to measure eating behaviors and psychological problems. They found that girls with low self-esteem are at risk for eating disorders by the ages 15 to 16. Sugar (1993) reviewed a survey conducted by the American Association of University Women (1991) with 3000 children. He reported that they found that confidence, assertiveness, and positive feelings decline with age in girls more often than in boys. They also discovered that at age 8 to 9, 60% of girls were confident and assertive, and had positive feelings about themselves, and by the 10th grade, only 29% felt that way. In contrast, 67% of boys were confident at age 8; and by age 14, 46% maintained confidence.

Parsons, Ruble, Hodges & Small (1976) extrapolated from concepts articulated in attribution theory and suggested that socialization mechanisms regarding one's performance are affected by sex-role stereotypes. This researcher proposes that this theory can be applied to explanation of eating disorder occurrences, especially because one's self-esteem can be weak or fluctuating during adolescence.

Parsons and his colleagues (1976) asserted that the adolescent's attribution of success or failure is influenced by socialization processes such as the differing expectations shown by parents and teachers for males and females. They found that males are more likely to attribute success to internal factors such as hard work and abilities and to attribute failure to external factors such as luck and difficulty of the task, whereas females exhibit an opposite attribution pattern. Applying this finding to eating disorders, one might predict that females attribute problems with their weight and appearance to failures in their own ability to control food intake and exercise and attribute success in weight control to external factors. To corroborate this speculation, some researchers have noted the tendency for girls with BN and BED to generalize devaluation of themselves to several areas of self-image (Garner, 1991, American Psychiatric Association, 1994, & Cooper & Fairburn, 1986). In a similar line of reasoning with regard to eating disorders, one might expect that males attribute failures with regard to their weight and appearance to external factors, and successes in weight management to their own ability to control food intake and exercise.

The psychological impact of parents' and teachers' sex-role stereotyping is not considered the only source of self-esteem problems in the eating disorder paradigm. Peers can also affect each other's self-esteem and social confidence. Nylander (1971) found that although children share in their love of junk food they disapprove of overweight friends. He noted that pervasive negative attitudes toward obesity are developed young in life. He also indicated that overweight children suffer peer ridicule more than other children. This finding was also described in research conducted by Richardson, Hastorf, Goodman, and Dornbusch (1961), Staffeieri (1967), and Hill and Silver (1993).

It is possible that the impact of peer ridicule and related exclusions from social opportunities is harder on children as they age. Mendelson and White (1985) and Hill (1993) found that overweight nine-year-olds with low body esteem do not differ from their peers in global self-esteem, but by age thirteen those with low body esteem also demonstrate poor global self-esteem. Stafferi (1967) conducted a study regarding "fat person" stereotypes in children and discovered that stereotypes are well established by the age of seven. He attributed this early prejudice to the negative adjectival attributes such as "mean" and "lazy" often assigned to endomorphs, people with rotund body shapes. Dwyers, Feldman, Seltzer, and Mayer (1967) reported that obese girls have fewer dates and other social activities during the teen years and that they experience lower acceptance rates into high-ranking colleges.

Steiger and Stotland (1995) put forth the idea that, while theories on the psychopathology of eating disorders are diverse, there is some consensus on the belief that eating syndromes express underlying "self" or "self image" disturbances that are modified by one's social setting (p.50). They compared the psychopathology related to self-concept that is found in the restrictor-type of anorexia with the binge/purge-types in both anorexia and bulimia in order to illuminate the processes involved in self-image disturbances. Essentially, they proposed that one could conceptualize the restrictor-type as "being structured around defense from the outside influences, and the binge/purge-type as being outwardly directed in a quest for self-soothing and need-fulfillment" (p.51).

Perfectionism

Perfectionism is described as the expectation one has of superior performance in oneself and the belief that others also require that of them. When perfectionism is a primary personality characteristic, a person may tend to direct excessive emotional and physical energy towards superior performance and, even in the face of obvious successes, tend to remain highly critical of oneself. Essentially, perfectionism is impossible, because no matter how well one does, it is never satisfactory.

For someone with an eating disorder or significant eating problems associated with body image concerns, perfectionism comes into play when one treats their body and health secondary to body size ideals. Individuals who are perfectionists are considered more susceptible to developing an eating disorder in response to external factors, potentially even from the iatrogenic effects of instruction or testing for eating disorders. Perfectionism is a trait often identified in persons with AN (Garner, 1991; Bruch, 1979 & Lee, Hsu, & Wing, 1992). Garner (1991) included perfectionism as one of the scales on the EDI-2.

Bruch (1973) maintained that the dynamic occurring between perfectionism and eating disorders is that once one internalizes the perfectionist standard of an ideal body image, the individual has minimal emotional distance or boundaries against influential messages regarding body size. Furthermore, individuals who are perfectionists with severe eating disorders are often resistant to treatment. This is attributed to their internalization of social messages in which they believe they are rewarded for an increasingly thinner body (Wheeler, 1990; Levine & Smolak, 1998 & Davies & Furnham, 1986).

Perfectionism as a trait in BN is not as clearly evident as it is in AN. However, Peterson, Schulenberg, Abramowitx, Offer, and Jarcho (1984) found perfectionist strivings along with other personality factors such as feelings of ineffectiveness, depressive symptoms, and self-regulatory deficits in cases of adolescents with bulimia. Considering these findings from a feminist perspective, one might postulate that a large part of the personality factors identified in eating disorders are the result of societal expectations placed upon females. Some examples of the perfectionism that are gender specific are described by Naomi Wolfe's (1990) depiction of the "beauty myth." She proposed that people have consciously or unconsciously accepted "a beauty standard." Greer (1984) stated a feminist interpretation of eating disorders and body image succinctly, "The social body constrains the way the physical body is perceived"(p. 121).

The historical roots of perfectionism are not as well documented in eating disorder literature as the other constructs and behaviors such as drive for thinness, body image, and dieting practices. However, writers in philosophical and sociological disciplines have generally depicted perfectionism as both an individual and societal trait. To understand perfectionism as a societal trait, one might liken it to the "individual writ large," because societal standards have varied throughout time to affect individual behaviors. The early Greeks' described a "perfect human" as an individual who followed the pursuit of higher knowledge and bravery. Although standards for ideal male beauty have changed little, the standards for female beauty have changed with society's ideals. In early statues and paintings, the "ideal female beauties" are featured as large, Rumanesque-like figures. In contrast, during the 20th century, the thin figures characteristically found in films and photographs were considered beautiful.

Studying history is not the only way to observe varying depictions of perfection. There are several ethnic and cultural groups that are noted for their idealization of larger figured females. The differences between cultures regarding "ideal body size" are evident even in commonly heard expressions. For example, one might hear the saying in North America, "You can never be too rich or too thin." In contrast, the Hong Kong greeting, "You have put on weight" is considered a compliment (Lee, Hsu, & Wing, 1992). Unfortunately, the perfectionist standards and high expectations characteristic of our North American society are catalysts for chronic dissatisfaction with one's body and self. Feminist writers such as Wolfe (1990) and Brumberg (1988) attributed the rise in perfectionism over the past decades as being partly responsible for the rise in eating disorders.

Overall, it appears that the roots of perfectionism are attributed to individual personality styles and to social influences. Perfectionism is often discussed in eating disorder prevention curriculums and programs because it is believed to be a risk factor in the eating disorders (Levine & Smolak, 1998; B.C. Eating Disorder Curriculum, 1999 & Piran, 1998). Consequently, it is considered important to alert students to any unrealistic perfectionist standards they may apply to themselves. A further rationale for including a discussion of perfectionism in eating disorder prevention programs is to make students aware of the diverse body size standards of earlier times and throughout various cultures. Ideally, with such knowledge, students will be better equipped to identify and critique the negative impact of societal standards on their own body images.

Body Image

Puberty is a time of extensive change in the body, and so a cohesive body image is hard to attain. Rosenbaum (1993) articulated this adolescent challenge in his explication of body image. "The picture of our own body which we form in our mind is a plastic, constantly changing concept, continuously modified by bodily growth, trauma, or decline, and significantly influenced by the ever changing interaction with the social environment" (p.63). Disturbed body image, then, is a prominent feature of the eating disorders. Garner (1991) included a scale called *Body Dissatisfaction* on the EDI-2 to assess body image concerns.

Rosenbaum (1993) is a doctor who has worked with adolescent girls that present with various types of psychopathology. In his clinical practice, he has found that these girls experience the body as a reflection of the self so that it can be "a source of conflict, shame and inadequacy as well as a source of pride and pleasure" (p.62). To determine "body image" experience in the general population, he interviewed thirty 11-17-year-old, normal, healthy female adolescents about their body and body image. Some of his findings are useful to consider here, because he provides their qualitative descriptions of body image and dissatisfaction.

Rosenbaum (1993) asked the girls what they would change about their bodies if they had three wishes. He reported that their most common wish was to "lose weight and keep it off." Other wishes were clustered around similar themes regarding appearance and "fitting their looks to society's stereotypes of beauty." He indicated that most of the girls devalued or undermined their looks. He concluded in this study that all the girls were painfully aware of the value society places on the attractiveness of females.

Age and maturity are noted for their role in body image; acceptance of increases in one's body size occurs with maturation. Rosenbaum (1993) found that the early adolescent girls were most concerned about their breasts, while 16-17-year-olds stated that "people should like them as they are." Essentially, he discovered that younger girls were more concerned with minor imperfections and flaws while the older girls were more accepting of their body-selves. He also noted that the girls who were physically active were more accepting of their own bodies. Finally, he observed that the levels of self-esteem and self-confidence the girls exhibited fluctuated with the state of their body image.

Rosenbaum (1993) found that it takes girls longer than it takes boys to accept their growing and changing bodies. He also noted that it was difficult to get the girls to find something positive about their bodies, although they easily discussed aspects of their bodies that they did not like. Apparently, many girls mentioned their hair as a positive part of their body.

Although the subject of hair is a departure from body image concerns that primarily revolve around weight, it is interesting to note references to hair in other eating disorder research. In the eating disorder literature reviewed by Laverty (1995), hair was described as a starting point of disagreement between the adolescent and parent. She proposed that determining the color and length of one's hair is symbolic of owning control over one's body. Another conceivable interpretation regarding ownership of one's body that can be related more directly to body image is that control of one's appearance, whether it be regarding hair or body size, is an important step in the separation and individuation developmental processes in which the adolescent separates from the parent. Rosenbaum (1993) suggested that in cases of faulty separation from the parents, such as the anorexic girl who literally starves herself back into childhood, it might be a case of avoiding this developmental separation (p.65). Clearly, body image and other psychological processes such as separation/individuation developmental processes are associated.

Rosenbaum's research and accounts of his clinical experiences are choice examples of the impact of body image on girls in clinical settings as well as in the general population. One explanation for these findings is that an ongoing excessive concern about body image occurs when a girl is psychologically vulnerable to external influences and may not have experienced enough protective factors to sustain her actual self-image. Considered from this viewpoint, the extent of society's influence on eating and self-image may well be regulated by one's innate and learned ability to sacrifice the self and one's vulnerability to opinion.

There is less documentation regarding the interaction of the male's body image and eating disorders. Image and body concerns that are prevalent in males that have been noted to be potentially involved in eating disordersare generally that males are asked to be masculine yet sensitive. Anderson (1988) contended, "Males are being asked to develop a fit, mesomorphic athletic appearance, an indifference to danger, an egalitarian attitude toward women, along with a sense of humour, and the sensitivity of a poet" (p. 66).

Separation/Individuation and Boundary Problems

Rosenbaum (1993) defined the concept "separation and individuation" as a developmental process in which the adolescent must learn to manage the tension between growth and the desire to regress. Blos (1967) and Mahler (1963) are attributed with initial clarification of this psychological concept; however, it has since been applied to explication of a range of developmental concerns. In the eating disorder research, problems with meeting this developmental challenge were characterized as maturity fears (Crisp, 1965 & 1980 & Frielander, 1990). Garner (1991) included maturity fears as a scale on the EDI-2. I include formulations and descriptions of "separation and individuation" from a range of disciplines in order to illustrate the psychological processes associated with maturity fears.

Frielander (1990) queried the relationship between difficulties that a person experiences with separation/individuation and the cognitive-behavioral indicators characteristic of eating disorders. Based on results from self-report measures she administered to 124 college women, she proposed that difficulty with psychological separateness is one cognitive-behavioral indicator characteristic of eating disorders. She described this difficulty as the inability to separate self from opinion and as one's own thinking and behavior patterns. She contended that such psychological separateness is more difficult for females than for males and suggested that this is one reason for greater occurrence of eating disorders in females than in males.

Leite (1979) coined the term "boundary" to describe the degree of psychological separateness people have from one another. He stated that for persons with separation and individuation problems, "The boundary between themselves and others is so permeable that they cannot tell where they end and others begin" (p.48). He proposed that healthy boundaries are especially problematic in adolescence because youth are in a position of minimal impact in society and thus search outside themselves for validation of their identity. It is interesting to note that in more group-oriented societies, separation and individuation processes are fostered by puberty rites intended to assist the youth with claiming an adult identity (Mead, 1942; Brooks-Gunn & Reiter, 1985 & Carlick, 1995). In those societies, boundaries are not considered a concern, nor are eating disorders characteristically prevalent.

Essentially, separation and individuation processes are normal and necessary components of the development of healthy self-esteem and identity. In adolescence, the key psychological challenge appears to be the ability to separate one's identity from parents and other external authorities. For youth, this is even a greater challenge because they have more vulnerable psychological boundaries and because this is a time of transition of identity from childhood to adolescence and onward to impending adulthood. A credible explanation for the occurrence of eating disorders is that adolescents with weak psychological boundaries who also are challenged by the separation and individuation developmental processes are more vulnerable to external influences such as the opinions of others and media messages regarding body size.

Conclusion on Sociocultural and Psychological Explanations and Approaches

The sociocultural and psychological topics were reviewed in order to consider the range of influences potentially responsible in the onset and maintenance of an eating disorder. Historical accounts were discussed to illustrate societal impacts on the prevalence of eating disorders. The psychological traits and developmental challenges that are viewed as related to eating disorders are perfectionism, body image, maturity fears, separation/individuation and boundary concerns, self-esteem, and social confidence. The social situations that were examined are family factors, peer factors, and group acceptance factors of conformity and deviance.

Thus far, in the literature review, a wide range of literature and research on eating disorders was included. The general consensus is that eating disorders should be understood and treated from a multidimensional perspective, because many factors appear to be involved in the onset and maintenance of an eating disorder (Garner, 1991; Hsu, 1990; Russell, 1993; Rothenberger, 1995; & Shisslak, Crago, McKnight, Estes, Gray, & Parnaby, 1998).

In the remainder of this literature review, there is discussion of topics more specifically related to eating disorders in adolescence and to the demographic variables investigated in this research project, age, grade, gender, ethnic background, ethnic diet, and residence. In addition, findings regarding eating disorder occurrence in urban and rural settings are reviewed. There is little documentation in the eating disorder literature concerning factors such as ethnic diet and residence, so extrapolatations from a range of disciplines are presented in order to depict how these variables might be involved in disordered eating behaviors and attitudes.

Adolescence

Adolescence is a time of unique developmental challenges. There are significant biological and cognitive changes. In addition, the adolescent experiences fluctuating emotions that are common in this developmental stage. In the midst of notable biological, cognitive, and emotional changes, adolescents are internally and externally driven to establish self-identity within their social and cultural milieu. Thus, with these changes and demands in mind, adolescence is conceptualized by some as a time of "turbulence," "craziness," or "storm and stress," and by others as a time of normal developmental tasks (Freud, 1958).

Adolescent psychological concerns that have been documented in the eating disorder literature, and that are tested in this study, such as body image, self-esteem, maturity fears, interoceptive awareness, and impulse control, are viewed as cornerstone experiences of the adolescent growing experience. Consequently, concerns voiced by researchers of eating disorders in adolescents are necessary to consider. Steiner, Sanders and Ryst (1995) indicated that the primary task faced by researchers of eating disorders in adolescents is to be able to distinguish between normal growth factors and eating-disorder symptoms. Their concerns are described in the following quote in order to illustrate issues involved in this formidable task:

> Developmental issues also cloud interpretation of this kind of research, as we don't know if psychopathology looks the same at different ages. For example, the drive for thinness and dieting in a fourteen-year-old could manifest quite differently in a child of eight, as the current epidemiological studies tell us: At age eight speaking of dieting results in no or small changes in caloric intake; in mid-adolescence, however such statements seem to be tied to some form of purgation. Normative cognitive distortions at younger ages may also mimic the abnormal body image distortions found in eating disorder patients of older age (p.95).

Screening for Eating Disorders in Adolescents

With the above caveats in mind regarding adolescent understanding, there has still been a great deal of research regarding eating disorders in this age group. This has been achieved primarily with questionnaires and/or follow-up interviews and by retrospective studies of individuals who have been diagnosed and/or recovered from eating disorders. In this section, there is discussion of both of these methods in order to provide a baseline understanding for the following sections in which prevalence rates and research regarding adolescents are reviewed.

Steiner, Sanders and Ryst (1995) indicated there are problems with a retrospective approach primarily because of the difficulty in separating existing from pre-existing factors in the onset and maintenance of eating disorders. They contended that no one is yet sure of the time it takes to return to baseline functioning and that any remaining biological or psychological traits could as likely be attributed to the effects of malnutrition in an eating disorder as they could be to pre-existing traits. They referred to the famous study done by Keys, Brozek, Henschel, Mickelsen and Taylor (1950) on the results of starvation to illustrate their concerns. Essentially, starving males in a camp for conscientious objectors exhibited prolonged biological and psychological changes long after their self-starvation ended (p.97). The current strategy of many researchers now is to identify risk factors in young subjects with and without eating disorders from both clinical and general populations.

The study conducted by Flament, Ledoux, Jeammet, Choquet and Simon (1995) is a choice example of screening efforts that can be applied in eating disorder research. The comprehensive study was completed in two stages. The first stage of the research involved a whole population survey in which they administered questionnaires to randomly selected junior and high school students (*n*=3527). The second stage involved clinical interviews with three groups of youth from the large sample. The first group was formed based on eating disorder symptoms and recent hospitalization for an eating disorder, and the second group was formed based on depressive symptoms and recent hospitalization for suicide attempts. The third group consisted of controls of the same age and gender. They found that preoccupation with weight, body image, and dieting is prevalent in clinical and general population adolescents. The prevalence rates for BN in their study were estimated to be 1.1% for girls and 0.2% for boys. They also noted that as early as 12 years of age there were occurrences of vomiting and use of laxatives and diet pills, with increases in the frequency of these behaviors by age 14. They concluded that because these problems are widespread, appear early, and increase in frequency by age 14, there is a need for more research of both the clinical and subclinical forms of BN.

Other reasons to conduct screening research for eating disorders are to ensure that treatment is provided early in the eating disorder and with the objective of prevention in mind, to identify subclinical features or at-risk behaviors and attitudes. In addition, Garner (1991) and Shoemaker (1998) noted that eating disorder behaviors are often kept secret for many years and that patients only seek help when the disorder is at unmanageable levels.

Risk and Protective Factors in Eating Disorders in Adolescents

One rationale for conducting screening and/or prevalence research of disordered eating behaviors and attitudes are that results might potentially be applied to the identification of the precursors of eating disorders. Another rationale for studies of prevalence is to identify and understand what protective factors are involved. This is in keeping with the objectives that are stated in the resiliency research: to understand how some individuals are able to develop into healthy and successful adults despite difficult origins (Jessor, 1998). A final rationale for conducting prevalence research is that the results can be utilized in designing prevention programs specific to the group being assessed. In the final chapter of this dissertation, there is discussion of how eating disorder prevention programs can be applied to the Whitehorse youth.

Risk factors can be examined for their role in the onset and maintenance of an eating disorder. Some researchers have focused on the identification of risk and prognostic factors involved in the maintenance of an eating disorder. Engeland, Ham, Furth, and Strien (1995) reviewed the literature on prognostic factors in eating disorders. They found research supporting the supposition that eating disorder behaviors, personality, support systems, and body image are all factors in one's prognosis. In adults, poor outcome was predicted by extreme weight loss, bingeing, vomiting, abuse of laxatives, social isolation, low self-esteem, premorbid personality disorders, and distorted body image. Good outcome was related to good family relationships and a short duration of illness prior to clinical treatment (Steinhausen et al & Herzog et al, 1988).

For adolescents, Engeland et al (1995) found that gender, duration of illness, and weight loss were variables not necessarily involved in one's prognosis, although they acknowledged that these variables have been listed as risk factors. Engeland et (1995) cited research suggesting that variables related to poor outcome were: certain types of family, certain types of treatment, poor timing of treatment, depression, premorbid obesity, distorted body image, and premorbid behavior problems (Crisp et al., 1977; Steinhausen & Glanville, 1983; Jarmen et al., 1991; & Jeammet et al., 1991).

Steiner, Sanders and Ryst (1995) explained precursors and risk factors of juvenile eating disorders by incorporating a developmental perspective. They attributed eating disorder onset to the result of many antecedents that build over the years, which are exacerbated by the stress of adolescence. Their model can be utilized in order to understand how the "stacking of factors" is implicated in the onset and maintenance of an eating disorder. They listed the factors as follows:

(1) biological factors such as gender, body mass index, fat distribution and temperament;

(2) family factors such as parenting, family attitudes towards body size and image;
(3) psychological problems such as separation anxiety, shyness, weak self concept, and anxiety; habits and behaviors such as early pica or voracious eating, fussy eating;
(4) social and cultural factors such as peer relationships, maturity for social engagement and cultural definitions of body image; and
(5) crises that occur such as those with family and friends;
(p. 432).

Strober (1984) supported the perspective that several factors need to be considered regarding the onset of an eating disorder. He examined stressful life events in the 18-month period prior to the onset of an eating disorder with a group of 25 female adolescents. He identified the following stressful life events: (1) rejection by peers, (2) arguments between and with parents, (3) serious parental or personal illness, (3) not having extracurricular activities, (4) father's absence from the home, (5) involvement in drugs, and, in the younger females, (6) menarche.

Variables specific to present research

According to Garner (1991), the sex and age of respondents vary along the eating disorder dimensions. The other dimensions of ethnic food in the diet, ethnic background, and residence included in this research project were not as often cited in the research. The rationale for including these independent variables in this research effort was to assess whether one's identification with their ethnic background and proportion of ethnic food in their diet is associated with eating behaviors and attitudes. Also, the question regarding residence was included to assess whether leaving one's family and community to attend school has an effect on diet and eating disorder risk. School of attendance was also queried. This variable was included not to assess it as a potential factor in disordered eating behaviors and attitudes but as a control for any differences between the school populations.

Age, Grade, and School

Age and grade were two variables investigated in this research; however, it was recognized that they overlap. Therefore, grade was primarily included in order to account for potential diversity of ages found in each grade. The rationale applied was that if significant findings were evident with these two variables, then recommendations regarding grade-based prevention efforts would likely have to be reflective of age diversity. The eating disorder literature cited regarding grade was similar: either it was exclusively investigated or paired with the age variable (Weaver & Blundell, 1990 & Gresko & Rosenvinge, 1998).

Similar reasoning was applied with the inclusion of the school variable. If significant differences existed between students in each of the schools, then prevention efforts would needed to reflect specific needs. Furthermore, if there were no apparent differences between the schools, one would be better able to generalize the findings to the Whitehorse youth that did not participate in this research project. When conducting a literature search, no eating disorder research was found in which school was identified as a relevant factor. However, in other disciplines, there are some researchers that have found that school size is relevant to cohesion among students (Udry and Bearman, 1998). Ensminger and Juan (1998) indicated that attachment bonds are greater in small schools and that they have been linked to lower instances of problem behaviors. Furthermore, Steinberg and Avenevoli (1998) suggested that an adolescent must be viewed in light of context as well as individual behaviors; from this perspective, the school and even the grade that a youth attends could be risk-prone and affect the individual youth.

There were mixed findings on whether or not the age of eating disorder onset is a factor in predicting a good prognosis. Ratnasuriya, Eisler, Szmukler, & Russell (1991) found that individuals whose onset occurred at a younger age had a better long-term prognosis. In contrast, Bryant-Waugh (1988) reported that prepubertal onset is often associated with a poor prognosis. Swift (1982) indicated that there is inconclusive research regarding prognoses for people younger than 15 years of age. He attributed this to methodological problems in research and to factors involved in the etiology of an eating disorder. He stated, "It is difficult to differentiate eating disorder concerns such as body image and maturity fears, from the similar developmental concerns of characteristic of young teens" (p. 42).

There are variations in reports regarding the age of onset of AN and BN. Garner (1991) reported that the age of onset in the majority of AN cases is either before or during puberty. Mitchell, Hatsukami, Pyle, Eckert and Soll (1987) indicated that the mid-teens are typical for age of onset in BN cases. However, in both AN and BN, there are exceptions to age of onset, so that cases are found in children and in middle-aged and elderly adults. Schmidt, Hodes, and Treasure (1992) submitted that persons with early-onset bulimia (<15 years of age) have a more negative prognosis. They also reported that in early-onset bulimia cases, there are additional complicating factors such as psychopathology, self-destructiveness, and inadequate parental control. Story, Rosenwinkel, Himes, Resnick, Harris & Blum (1991) examined disordered eating behaviors and attitudes and found that the frequency and severity of chronic dieting and unhealthy purgative measures is higher in girls in the middle- to late-teen age group than with younger girls.

Fichter and Quadflieg (1995), who investigated eating disorders in the general adolescent population, suggested that the timing of puberty is a factor to consider with an eating disorder or another psychological problem. Brooks-Gunn (1988) contended that late maturation in girls and early maturation in boys might be viewed as protective factors against depressed affect. In addition, it appears that the maturation process itself has an impact on self-esteem and image, especially for girls. Rosenbaum (1993) found a decrease in positive feelings about oneself in females as they progress from ages 8 to 15.

Overall, it appears that adolescents are more at risk for eating disorder concerns than adults or young children. One can extrapolate from the research results regarding age of onset and suggest that there is greater risk of anorexia in the early teens and of bulimia in the middle to late teens. The timing of puberty and adolescence is noted as a potential factor in the presence of psychological concerns and eating disorders.

Gender

There is little doubt that eating disorders occur more frequently in females than in males and that females are considered more at risk for developing eating disorders. In the *DSM-IV*, the American Psychiatric Association (1994) reported that between 0.5% and 1.1% of individuals that meet the full criteria for AN and 1.0 to 3.0% of individuals meet the full criteria for BN. They indicated that males present with eating disorders in 0.1% of the cases. Researchers of eating disorders in adolescents reported similar differences between gender prevalence; however, they also indicated that there are increasing numbers of boys who exhibit disordered eating behaviors and attitudes such as binge-eating. Yanovski, Nelson, Dubbert, and Spitzer (1993) and Ross and Ivis (1999) indicated that BED occurs with comparable frequency in both males and females. Prevalence rates for BN are calculated at 1.1% in girls and 0.2% in boys (Flament, Ledoux, Jeammet, Choquet & Simon, 1995 & Garfinkel, Lin, Goering, Spegg, Goldbloom, Kennedy, Kaplan, & Woodside, 1995).

Some researchers attributed the differences in prevalence between males and females to the effects of society on each gender; while others focussed on the impact of biological changes that the youth, in particular the female youth, undergo in puberty and throughout adolescence. Steinhausen (1995) proposed that, "The biology of being female confers a more important risk than societal expectations in terms of gender-related roles" (p. foreword, xi). For example, the female biological changes such as increased fat deposition might lead to body dissatisfaction and unhealthy weight-reduction practices.

Sours (1980) attributed the interaction of biology and society to the differences found in prevalence of eating disorders in males and females. Herzog (1992) articulated this position, "Girls are becoming sexually mature at younger ages due to ample nutritional resources and yet have not developed the psychological resources to deal with a society that is sexualized and narcissistic about the body" (p.55). Brooks-Gunn (1988) also voiced this concern with regard to early-maturing girls who are noted as being more at risk for eating disorders and other psychological problems.

Hsu (1990) suggested that the reason there is a difference in frequency of eating disorders found in males and females is that males have less body dissatisfaction. In separate studies, Davies & Furnham (1986) and Eisele, Herstgaard & Light (1986) found that 40 to 80% of high school girls experience body dissatisfaction. Male body dissatisfaction has seldom been measured but is considered to be much lower, at 10 to 20% (Garner, 1991).

Anderson (1992), who has studied eating disorders in males extensively, proposed two sociocultural explanations to account for a lower prevalence of eating disorders in males. First, he contended that the process of transition from childhood to adulthood is harder on females than it is on males in Western society. The second explanation follows from the first, that society does not expect boys or men to be thin. However, Anderson also noted that researchers have found that when males are placed in situations in which weight loss is required---such as the situations of many swimmers, runners, and horse jockeys---there is a substantial increase in eating-disorder behaviors (Yates, Leehey, & Shisslak, 1983; King & Mezey, 1987; & Steen, Oppliger, & Brownell, 1988). A potential explanation for these findings is that the reinforcement of competing in a sport is a critical factor in occurrences of eating disorders in males. To support this premise, there are similar findings reported with respect to females in sports and dance that require a thin body shape (Garner, 1991; Brooks-Gunn, Burrow & Warren & Rousen & Hough, 1988).

Anderson (1988 & 1990) indicated that the profiles of males and females in eating disorders are similar. He added that males might be underdiagnosed because they do not fit the amenorrhea criterion. Apparently, the male correlate of amenorrhea is the experience of low energy and low sexual interest. Hsu (1990) reported that males with eating disorders are usually found in three age groups: prepubertal, adolescent, and adult. Furthermore, he found that the younger males tend to have a premorbid history of obesity. In contrast, Anderson (1988) reported that females who develop eating disorders feel fat before they begin dieting. He discovered that only 10 to 12% of the females were above average weight before dieting, whereas the majority of males were medically overweight.

In a recent article in the *Edmonton Journal* (April 2000), a young man described his struggle with an eating disorder. His depiction of the history of his eating disorder was similar to the females' qualitative descriptions found by Tessier (1993). He indicated that his eating disorder began in the context of strict dieting for a sport. He added that he became addicted to the control he felt over food and his body. He acknowledged that his family was troubled throughout his childhood. His primary complaint was that he had not yet been able to find sufficient treatment. It was his understanding that this was because his condition was unrecognized as an eating disorder in the early years. He stated that many practitioners and physicians did not consider an eating disorder as a diagnosis for him because it is primarily considered a female disorder. He added that the current problem he faces is finding appropriate psychotherapy.

It appears that although the prevalence for eating disorders is much higher for females than it is for males, the experiences and profiles of each are similar. Biological and sociocultural factors are implicated in the onset of an eating disorder for both males and females. However, the adolescent female is still considered at a greater risk for an eating disorder than is an adolescent male.

Ethnic Diet

The variable "ethnic diet" was investigated in this research project in order to determine the impact of diet on the eating behaviors and attitudes of Whitehorse students. Given the range of ethnic groups that live in the Whitehorse area, one is able to examine this variable. The Aboriginal ethnic diet is particularly interesting in this study because Aboriginal people represent a significant proportion of the Whitehorse population. In addition, their diet is representative of depictions of the Northern Canadian lifestyle: hunting and fishing and being closely associated with the land. There are two aspects of the variable "ethnic food in the diet" to consider. One is that ethnic diet is representative of greater familial and cultural identification and belonging; and the other is that it is associated with more opportunities for nutritionally sound meals.

In reviewing the eating-disorder literature, this researcher found no studies regarding ethnic diet. Nevertheless, it was evident that there is some interest in particular types of diets starting to surface. For example, Critser (2000) and Young (1999) explored the phenomenon of "fast foods." In addition, there has been a great deal of research regarding the prevalence of dieting in eating disorder occurrences and impact of dieting on eating disorder occurrences (Story et al, 1991; Agras & Kirkley, 1986; Attie & Brooks-Gunn, 1989; Striegel-Moore, Silberstein, Frensch, & Rodin, 1989; Pyle, Mitchell, & Eckart, 1981; Stice, Mazotti, Krebs & Martin, 1998 & French, Story, Downes, Resnick & Blum, 1995).

Generally, we define a "diet" as a special and/or restricted type and amount of food we eat for reasons such as ill health or obesity. Dieting is widespread and has been recognized as a potential precursor to an eating disorder (Anderson, 1988). Therefore, it is encouraging to know that there are efforts aimed at better understanding the effects of dieting.

"Diet" is also defined as the food and drink a person customarily nourishes oneself with. It is curious that eating disorder researchers have not investigated "diet" or "ethnic diet" from this perspective, especially given recent interest in resiliency and identification of protective factors (Jessor, 1998). In this review of literature, this researcher drew from sources in which the relationship between one's diet and physical and psychological health was discussed. In addition, the nutritional habits of Aboriginal and Non-Aboriginal Yukoners are documented.

Visser (1991) authored a book called the *Rituals of Dinner* in which she explored the origins, eccentricities, and meaning of dining by drawing on historical and sociocultural accounts. Throughout her book, she stressed the importance of food to one's social and cultural identification. She contended that one's diet is essentially learned in the bosom of one's family and community and represents one's ethnic identification and sense of belonging. She stated, "The language one first learns to speak, and the food one is accustomed to eat in childhood, are two of the most fundamental preservers of an adult's social and racial identity" (p.42).

Visser also described food as our "ritual relaxation" that we share with the groups to which we belong. Essentially, she proposed that the sharing of food is the foundation of civilized behavior that bonds individuals, families, villages and tribes together. To emphasize this point, she indicates that the Latin definition for "'companion" is "breaking bread together." She captured the essence of her thesis with the following comment, "It is not so much what is one the table as what is on the chairs" (p.262). To corroborate Visser's logic, Covey is cited (1997) on this topic. "The dinner table gives you the perfect opportunity to create a renewing tradition because of the food. As one of our daughters said, 'It seems as though many important traditions are surrounded by food, food, food. Food is the key. Everyone loves good food'" (p.282).

However, beyond the potential benefits of one's social and psychological ties that are possible owing to family meals are the nutritional benefits. It is interesting to note that in the Yukon youth rated their health and nutritional knowledge less positively than do adults and older people. This is opposite to the pattern reported by citizens in the rest of Canada (Yukon Bureau of Statistics, 1994). As a result, one might predict that Yukon youth would benefit from meals their parents provide. As well, more Yukon females than males rated their health as excellent (Yukon Bureau of Statistics, 1994). This suggests that the youth, in particular male youth, are more likely than female youth to have problems with health as a result of the nutritional habits.

Guthrie (1979) outlined the factors involved in one's selection of a diet. She stated that youngsters who are concerned about their health, are emotionally stable, and come from homes characterized by good relationships chose better foods than youth motivated by considerations of group status, sociability, independence from parental control, or enjoyment of food. She also added that the more meals a youth eats away from home, the less likely he or she is to consume meals of adequate nutritional content. She attributed poor eating habits to skipped meals, lack of time or companionship for regular meals, rebellion against parental influence, lack of supervision in the selection of meals eaten away from home, and fear of obesity. In the Yukon, people spent 2.2% of their income on restaurant dining, and 10.8% on food purchased from stores (Statistics Canada, 1998). Although these food expenditures were not compared to the rest of the Canadian population, one might surmise that there are a significant number of individuals that lack regularly home-cooked family meals in the Yukon. Extrapolating from Guthrie's (1979) explanation of food choices that youth make, this may be particularly problematic for youth.

Dacks (1981) voiced concerns about Aboriginal eating practices. He stated that Aboriginal people that move away from their reserve or the community that they grew up in are found to be more prone to diabetes and obesity. He also indicated that native nutrition is often deficient when they substitute traditional food for sugared food products.

Wein and Wein (1995) described the positive aspects of the Aboriginal eating practices. They indicated that Aboriginal people still prefer traditional foods over marketed alternatives and that they strongly believe that the traditional foods are better for their health. Wein, Sabry and Evers (1989) described the Aboriginal diet preferences by referring to the results of the ratings made of 22 traditional and marketed foods: the preferred foods are moose, bannock, caribou, orange juice, duck, carrots, and apples. According to their study, wild game and fish are still prepared by traditional methods of boiling, frying, or preserving in the form of drying meat and fish. They also reported that in communities in which there are larger proportions of First Nations people, such as Old Crow, Yukon, 76% of daily protein intake is based on traditional foods. In contrast to the Yukon Bureau of Statistics (1994) findings regarding youth's lower ratings for health and nutritional knowledge, Wein and Freeman (1992) found that children's food preference ratings did not differ from adults for 31 of the 34 traditional foods. Although both studies focus on somewhat different measures, one may potentially conclude that traditional foods are important to the First Nations people and that First Nations youth share with adults their preferences for these foods. Given this conclusion, one might further reason that the Aboriginal youth that report greater proportions of ethnic food in their diets are more likely to consume nutritious meals.

In summary, while there are few accounts of investigation of ethnic diet in the eating disorder literature, there is some literature that can be applied to pose the argument that diet, in particular ethnic diet, is an important aspect of the psychological and physical health of youth. Furthermore, it is contended that the percentage of ethnic food in one's diet could be conceptualized as representative of the social and nutritional benefits of shared family meals and of the meals that are characteristic to one's ethnic background.

Ethnic Background

Garner (1991) indicated that most of the research on eating disorders has been conducted with Caucasian women. However, there is some research regarding the relationship between one's ethnic background and disordered eating behaviors and attitudes. In the following section, findings and explanations are presented regarding this relationship, with particular focus on Aboriginal people. As mentioned above, they represent a significant proportion of the Whitehorse population. As well, research outside the area of eating disorders is drawn upon in order to depict the potential impact of ethnic background on youth.

There are unsettled debates regarding the relationship of ethnic background and eating disorders. Some researchers have identified no differences between majority and minority groups on indices of eating disorders (Grange, Christy, Telch, & Agras, 1997). There is a plethora of inconclusive research regarding the relationship between one's ethnic background and one's weight and diet (Rosen, Silberg & Gross; Gowers & McMahon, 1989; & Rosen, Shaffer, Dumer, Cross, Deuman & Malberg, 1988). Nevertheless, when less serious disordered eating behaviors and attitudes are assessed, such as overeating, poor dietary choices, and unhealthy body image, more compelling results are noted between minority and majority groups (Garner, 1991). Snow & Harris (1989) contended that there is an increase in eating disorder symptoms as one's acculturation to Westernized society increases.

Relative to this concept of acculturation, Allison (1995) outlined problems that might develop when minority individuals conform to the majority population's "ideal body size" standards. First, such individuals may be prone to engage in dieting even though it is at odds with their ethnic and cultural values. Second, they may experience "anomie," which is defined as a lack of feeling that one belongs. Essentially, if one rejects one's ethnic/cultural standard of beauty, but is not yet accepted by the majority culture because they do not fit a standard of beauty, they are in "limbo" regarding body image.

There are few studies regarding eating disorders within Aboriginal ethnic groups. Rosen, Shafer, Dummer, Cross, Deuman, and Malmberg (1988) investigated the disordered eating behaviors and attitudes of Native American women. They reported that almost 12% of their sample used harmful weight control measures such as self-induced vomiting. In contrast, Geller (1996) documented minimal disordered eating behaviors and attitudes among 79 Canadian Native women between the ages of 17 to 50. Le Blanc (1995) contended that the decline of the traditional Native American culture could result in an increase in the incidence of eating disorders. To test this hypothesis, she administered questionnaires intended to measure eating disorders, acculturation level, and spirituality to 203 Native American women from 17 to 70 years of age. She found some weight problems and eating disorder symptoms, but was unable to establish a relationship between the variables of level of acculturation, spirituality, and eating disorders.

In examining associations between ethnic background and disordered eating behaviors and attitudes, there is a need to consider the inherent cultural and psychological impact of one's heritage. Thus, it is helpful to heed research efforts outside the area of eating disorders.

Rotherman-Borus & Wyche (1994) studied ethnic differences in the development of identity. They found that ethnicity is a factor in one's exploration of identity and that the developmental challenge of ethnic minority adolescents is that they must adopt a stance toward their own ethnicity. Atkinson, Morten, and Sue (1993) and Markstrom Adams and Spencer (1994) developed a model intended to portray the stages of development that minority youth experience. The stages involve conformity, dissonance, resistance and immersion, introspection, and synergetic articulation and awareness. Basically, the stages are as follows: (1) self-deprecation and group-deprecation of one's ethnic group, (2) group appreciation of the dominant group, (3) rebellion against ethnocentrism and against the dominant group, and (4) acceptance of one's own group and of the dominant group.

In addition to the developmental challenges that minority youth must meet, there is also the impact of each individual's ethnic background, which could be depicted as either negative or positive. Wagner and Compass (1990) described the potential negative impact of ethnic background on the psychological and academic functioning of adolescent girls and boys from minority groups. They found that these youth do better if they are from ethnic families that do not follow or ascribe to traditional gender roles. Researchers such as Allison (1995) and Young (1999) suggest that a strong ethnic background identification is important. They found that individuals from minority groups who are more prone to disordered eating behaviors and attitudes are less identified with their own culture and more likely feel pressure to conform to majority groups' standards.

As stated above, there have been few eating disorder studies conducted with Aboriginal ethnic groups (Rosen et al, 1988; Geller, 1996 & Le Blanc, 1995). However, discussion of findings regarding Aboriginal people, in particular Northern Aboriginal people living in the Yukon, can be utilized to outline concerns that potentially parallel behaviors and attitudes characterized in eating disorders.

Dacks (1981) documented a variety of social ills that Northern Natives have suffered as a result of uncontrolled, profound, and rapid change. He listed alcohol abuse as a factor involved in family and other violence and reported that their health problems are far greater than those of other Canadians. Dacks also stated that suicide is becoming increasingly common, especially among younger native people. He reported that substantial numbers of native people suffer from psychological disorders that are suggestive of turmoil, anxiety, and frustration. He also indicated that there is a high drop-out rate for students. In one study, he found that of the 1139 native students in Yukon elementary and secondary schools, only 12 were in Grade 12. He contended that problems in the First Nations community are "...compounded because children experience the failure and powerlessness of their parents and come to expect it for themselves" (p.37).

Driedeger (1992) focused on both Aboriginal and Non-Aboriginal people of the North. He compared crime rates across Canada and reported that the Yukon and Northwest Territories have the highest cost per capita for policing: it is 4 to 5 times higher than the other provinces. He stated that when crime occurs within the Native community, another compounding factor is involved: Native families are becoming increasingly "matrifocal"; in other words, the male parent is often a temporary member of the family and children lack a two-parent family.

It appears that ethnic background can have either positive or negative impact on an individual. In terms of the development of identity and a sense of belonging, it is likely a protective factor. However, in terms of problems that some ethnic youth face or the value-systems characterized in some ethnic groups regarding gender roles, ethnic background is potentially a negative factor. In this research, the objective was to identify what role ethnic background has in disordered eating behaviors and attitudes of the Whitehorse youth.

Residence

The variable residence was investigated in this research project in order to determine the eating behaviors and attitudes of students that must leave their home and community in order to attend school. In conducting a literature review of the eating disorder research, no references regarding residence were found. However, the impact of a youth's leaving home has been archived in a range of other research efforts and literature.

Jessor (1998) edited a book in which he and other contributors reviewed adolescent risk behavior. The focus of these researchers was the investigation of behaviors involved in a youth's well-being, health, and life course. Risk behaviors were described as inadequate social role performance, poor school progress, psychopathology, and health-compromising behaviors such as poor dietary practices or insufficient exercise (p.2). Jessor stated that protective factors also need to be considered. He stated that protective factors could be attributed to a youth's reduced likelihood of engaging in risky behaviors and reduced adverse outcomes of having engaged in them. In addition, he suggested that protective factors are potential moderators or buffers against exposure to risk factors or actual involvement in risk factors.

This researcher adopts Jesser's stance and presents literature regarding the possible risk factors of leaving family and community as well as literature regarding the likely protective role of family and community against dysfunctional eating behaviors and attitudes. There is review of instances in which youth have been separated from their families, in particular Aboriginal adults that attended residential schools as children and modern youth that attend boarding schools. In addition, there is discussion of the importance of family and community for a youth's psychological and physical health.

The legacy of the effects of residential schools on children can be referred to as a bitter example of the impact of leaving family and community to attend school. Coates (1991) provided an account of the Carcross Indian Residential School in the Yukon. He stated that this school was developed in 1911 for two reasons: First, day school programs were considered unsuccessful because of the nomadic nature of the First Nations people; second, the educators viewed residential schools as the best means of effecting a scholastic and cultural transformation of Native students.

Coates (1991) listed the problems that occurred at the Carcross school. Children were compelled to live away from home for as long as ten years because the school and government would not authorize summer vacation travel to distant places. Thus, students had difficulty maintaining contact with their parents. In the 1920s, there was a series of deaths among the student body and rumors about poor food and cramped quarters. As well, the school officials insisted on a strict, authoritarian code of discipline. They restricted socialization, interaction between the sexes within the school, and visits to the nearby Carcross community. Strapping and shaving the head were often used as disciplinary measures. Coates summarized that the most damaging results were separation from parents and community and an impractical education: Essentially, these youth were isolated them from their Native culture, and their schooling left them unable to cope with demands of either the native or non-native society. King (1967) indicated that many of those residential school students are now parents and grandparents and have suffered long-term serious crises, particularly regarding their personal and cultural identities.

The example that Coates (1991) provided is a worst-case scenario of the effects of the separation of children from their families. In contrast, Harris (1997) provided examples of British children who leave their home to attend boarding school. For these children, there are fewer instances of dysfunctional behavior and emotional repercussions. She attributed this difference to the consistency of culture and lifestyle the youth experience at home and school. However, there are examples in the North of the problems modern youth face when living away from one's family and community in order to attend school. Kleinfield (1994) described such a situation in Alaska, where policymakers face the dilemma of providing either small schools to rural students or having the rural students relocate to larger centres for their education.

> Should high school students attend boarding schools that are large enough to provide a variety of classes and activities? Or should rural students attend high school at home, even though these small schools do not look like a "real high school." In Alaska, as in other northern regions, the policy dilemma is intensified because most small rural communities have indigenous populations. Cultural survival and equity issues enter the debate that is not only about the quality of small high school versus a boarding school education." (p. 70)

Kleinfield (1994) indicated that the current Alaskan compromise for this dilemma is to provide rural high school students with a boarding school option. According to the Alaska Department of Education (1993) 82% of rural high school students attended the small high schools, 15% selected a boarding school, and 3% enrolled in correspondence courses. Alaska had over 200 schools with enrollment of fewer than 100 students.

Kleinfied (1994) followed the outcome of boarding school students in Alaska. He reported that there is a high dropout rate for students who were sent away to boarding school, as well as high rates of social and emotional problems. In 1973, he published a study in which he described the dismal outcomes of 105 village students who had entered boarding school programs as ninth graders. He indicated that by the end of their sophomore year, 55% had dropped out of school and 70% of the students who had no history of previous difficulties were referred for the mental health care of social and emotional problems. These problems ranged from serious homesickness to difficulties with alcohol and violations of the law. Academic gains were assessed at an average gain of zero on standardized achievement tests. As well, rates of college success were low.

Some explanation for the dismal consequences of boarding school education might be understood in light of theory and research regarding early role transitions and social bonds. Hogan and Astone (1986) contended that early role transitions are involved in later adult outcomes. To understand early role transitions and other factors, Ensminger and Juon (1998) investigated the processes that are noted for the enhancement or inhibition of growth and development. They followed a cohort of adults since their first grade in a poor urban neighborhood in Chicago. Their overall aim was the identification of the pathways from childhood through adolescence and young adulthood to drug use, crime, other problem behaviors, as well as the pathways to successful transitions such as employment and marriage. Their research is relevant to this study of eating disorders because they investigate the impact of social bonds in adolescence on later behavior patterns. Ensminger and Juan found that adolescent social bonds such as attachment to school and parental supervision are important for healthy development. Both males and females that lacked these ended up with high problem behaviors as adults. They also found that males who leave home before the age of 16 were more likely to exhibit adult problem behaviors. Marini's (1987) thesis that the acquisition and time of entry into adult social roles are key developmental life events involved in the outcomes in adulthood is one possible explanation for difficulties youth face if they leave home to attend school.

In order to endorse the viewpoint that family and community are important to the healthy development of youth, I reviewed literature in which the writers support this philosophy. Covey (1997) has authored several books regarding healthy habits. He proposed that because our society has changed dramatically over the past 40 years, parents and families must be even more proactive in providing emotional and cultural guidance. He stated that the changes are pervasive and evident in reduced family time and interactions. He noted that even the changes in school problems are significant: "In the 1950s it was gum, noise, dress code, littering and running in the halls, in the 90s it is drugs, alcohol, pregnancy, suicide, rape, robbery and assault" (p.56). Covey (1997) also cited conclusions from a recent survey in order to depict problems within family relationships: "Only half of our teenagers eat dinner on a regular basis with their parents. Ninety-eight percent of female high school students who live with their birth parents go on to college. Teenagers who don't have dinner with their families are 4 times as likely to have premarital sex" (p.285). He went on to contend that family and parents can "make a difference" around the dinner table. He concluded, "In all treatises on parenting, in all the psychological studies on child development, and in all the data on self-esteem, this humble key of dining together when rearing children is overlooked" (p.282).

Beyond the importance of the family is the importance of community in a child's physical and psychological health. This is especially relevant if youth feel supported by community members and identify with community members. Ranhawa (1992) depicted a reciprocal relationship between communities and schools. He indicated that rural communities suffer from school closures because social and cultural ties of a community are weakened. Essentially, he suggested that as the community loses its traditions and social identity, so the youth lose that connection when they must leave to attend schools in larger centres. In the following paragraphs, I discuss literature regarding the meaning of community for its members.

The study completed by Dias and Gingrich (1992) in which they surveyed farm families in four rural Saskatchewan communities is useful to review here as an example of the community experience in rural areas. They found networks of solidarity, community participation, and helping patterns that were restricted to kinship. They attributed these findings to the fact that these people share relative isolation, similarity of experience, and physical closeness.

This researcher contends that this "networking" situation is characteristic of the North and particularly notable among First Nations people. For example, helping patterns are identified among aboriginal people that live in both urban and reserve settings and have also been noted as being restricted to relatives and friends (Dosman, 1972; Nagler, 1970 & Ablon, 1964). West (1995) argued that no matter what ethnic group is involved, all people living in the North deal with limits to growth, movement, and achievement. He stated, "The conditions of the North are unforgiving, they make us dependent on one's fellows, cooperative skills, and communal capital" (p. 110).

The *Yukon Health Promotion Survey* (1993) was conducted to examine how Yukon residents perceive and promote their own health. Some of the findings are interesting to draw upon to illustrate Yukoners' perception of community, family, and health. A total of 1,313 households in Whitehorse and several other Yukon communities were targeted for this survey. The most notable finding is that community was important to most Yukoners. They acknowledged interrelationships between sense of community, quality of life, and self-rated health. Ninety-two percent of the Yukoners that reported excellent quality of life also reported a sense of community. This trend was also identified in relationships between health and community; essentially, better health was reported when individuals also experienced a greater sense of community. Community attachment was equal for all age groups, although 31% of people between the ages of 15 to 24 reported feelings of being isolated and alone. Over 60% of Yukoners rated the health of their community as excellent; however, they rated their family health as much higher than that of their community. Only 8% of the households rated their family health as poor or fair.

Conclusions to be gathered from this survey are that Yukoners perceived community as a healthy and important aspect of their lives. However, as with the Saskatchewan farm communities' kinship helping patterns, Yukoners identifed primarily with their families. Extrapolating from these findings and conclusions, one might predict that leaving the support and the community has a negative impact on one's health and quality of life.

In summation, community and family are considered important aspects in one's real and perceived physical, social, and emotional health. This is apparent in the disturbing examples of children who were separated from family and community as well as in the examples of how community and family are protective and supportive factors in one's well-being. Examining the "residence" variable in the context this research project may shed some light on the impact of moving away from home and community to attend school and occurrences of disordered eating behaviors and attitudes.

Rural versus urban setting

In addition to demographic variables researched, the disordered eating behaviors and attitudes of Whitehorse youth were compared to those of the youth living in larger and more centralized communities in southern Ontario and northeastern United States. The following literature was primarily drawn from research regarding differences between rural and urban communities.

At present, there are inconclusive findings regarding eating disorder occurrences in rural and urban settings. Some researchers have suggested that occurrence of eating disorders is less frequent in smaller communities. In separate studies, De Azevedo and Ferreira (1992) and Hoek (1991) found low rates of diagnoses of bulimia in adolescents living in rural settings. Hoek indicated that the prevalence rate for BN is 3 times higher in the city. In contrast, some researchers have identified no differences in rates of eating disorders in urban and rural settings (Story, Rosenwinkel, Himes, Resnick, Harris & Blum, 1991& Rather & Messier, 1993).

Hoek, Bartends, Bosveld, van der Graff, Limpens, Maiwald, and Spaaj (1995) evaluated the impact of urbanization, age, and sex differences on the incidence rate of AN and BN among patients (N=151, 781). They discovered that occurrences of BN are lowest in rural areas, intermediate in urbanized areas, and highest in large cities: 6.6, 19.9, and 13.9, respectively, for per 100,000 females per year. However, they detected no rural-urban differences in the occurrences of AN. They concluded that urbanization appears to be a risk factor for BN but not for AN.

When disordered eating behaviors and attitudes are examined, as opposed to actual eating disorders, rural youth appear to have more problems. Miller, Verhegge, & Pumariega (1999) tested their hypothesis that there is a greater risk for eating disorders in rural areas than is generally expected by administering the EAT-26 to 1,302 males and female adolescents in rural Appalachia. According to their results, 19.8% of females and 3.7% of males in this rural area were considered at high risk for development of an eating disorder. Sjostedt, Schumaker, & Nathawat (1998) investigated disordered eating behaviors and attitudes in urban and rural settings with the Australian Indian population. They found no differences between the urban and rural Indians regarding a fear of fat but noted that the rural Indians had higher eating disorder scores on the EAT-26 than did the urban Indians.

Overall, there were mixed findings concerning the rates of urban and rural adolescents with eating disorders and/or disordered eating behaviors and attitudes. There is a prevailing attitude that the rates are higher in the cities because of the greater accessibility to sociocultural influences on body image.

Zapf (1991) attributed inconsistent results regarding urban versus rural prevalence rates to the term "rural." He stated that it is "confusing, imprecise and lacks universally accepted definition" (p.36). He charged that there is an incredible range of rural population rates documented: from 2,500 to 50,000 persons. Zapf also contended that rural areas in the North are different than those of the South because one must also consider the remoteness of the setting. This distinction appears to be clear when one notes the differences in the crime rates of southern Canadian rural communities and the rural communities in the North. The size and setting of Whitehorse might be considered important components in the investigation of differences between rural and urban youth. Some of the problems faced by Northerners are documented below.

Shissel (1992) reported that male youth in Northern rural areas are victimized more often than male youth in other rural areas. He also indicated that rural property and violence crime rates are 8 to 10 times higher in rural Northwest Territories and the Yukon than in other rural areas of Canada. He attributed crime rate differences to the extra stress that rural communities face in the North. "A village of 3,000 in southern Ontario may actually have fewer local services than a community of the same size in northern Ontario. Residents of the southern community can access larger towns and cities with short to moderate car trips. However residents of a remote resource town must exert considerable time and effort if they want to use the services or opportunities of communities other than their own" (p.80).

There is no research regarding eating disorders in the Yukon or elsewhere in the Canadian North; therefore, cited studies regarding urban and rural differences in eating disorders are cited. In addition, other problems that Whitehorse youth might encounter such as crime rate and remoteness are referred to. These problems are the bittersweet aspects of smaller communities in the North. However, it would appear that living in a small centre such as Whitehorse is also positive. The "positives" earlier referred to were a greater sense of community, less technological impact, and greater independence (Ranhawa, 1992).

Prevention programs for eating disorders

The following review of eating disorder prevention and intervention approaches was included because of the perspective taken in this research: Ideally, prevalence findings are followed by program implementation. In this section, the advantages and disadvantages of prevention programs identified in the research are considered. Furthermore, there is a description of the relationship between media and eating disorders, especially with respect to how "media literacy" can be facilitated if it is based on the understanding of a child's developmental stages. A key recommendation voiced in this section is that eating disorder prevention programs can be designed according to the needs of the groups of students in question. In the final chapter, there is discussion how aspects of these eating disorder prevention and intervention approaches might be achieved in the Yukon.

McKenzie and Smeltzer (1997) described primary prevention as the effort made to reduce the incidence of a disorder in individuals who have not yet developed clinically significant symptoms. They also indicated that the objectives commonly adopted by prevention programmers is the elimination of factors involved in a disorder and the introduction of protective factors in order to counterbalance the impact of identified risk factors. Thus far, the majority of eating disorder prevention programs have been aimed at developing resistance against an eating disorder in school-aged girls.

Striegel-Moore and Steiner-Adair (1998) authored a chapter on the primary prevention of eating disorders in which they discussed the advantages and disadvantages of prevention programs. They stated that a clear advantage of prevention is that early intervention is the strongest predictor of recovery (Ratnasuriya, Eisler, Szmukler, Russell, 1991). They identified one disadvantage of the prevention programs: that minimal results have been found. They submitted that these prevention efforts have failed for several reasons. The first explanation they proposed is that programmers have neglected the social context in which messages such as "you cannot be too rich or too thin" are disseminated (p. 13). They also attributed failures to the fact that entire classes of risk factors are not dealt with in prevention programs. Specifically, they voiced the concern that there is a lack of awareness that "disordered eating may be used as a coping mechanism in response to a wide range of difficulties and stresses" (p.13).

Other researchers have articulated similar concerns regarding underlying psychological meaning and motivation involved in disordered eating behaviors and attitudes. For instance, Kolodny (1990) described an eating disorder as a "red flag" that there are other problems that simultaneously need to be addressed. Furthermore, in this researcher's clinical practice, clients have reported that once they had lost the coping strategy of disordered eating and dieting, they were unsure about what other coping methods to use in the face of uncomfortable emotions or stress (Personal communications). It follows then that a primary directive in prevention efforts should be to ensure that the individuals, families, communities, and cultures develop alternate and healthy coping strategies. Extrapolating from the concerns voiced here, it is apparent that school prevention efforts are likely to be more successful if cultural changes precede school changes. In other, changes in attitudes in the community are essential to changes successfully occurring in the school.

In the following paragraphs, there is description of some prevention programs. These were included here to provide direction and choice in prevention program development. As stated previously, it was contended that when significant concerns and/or risk and protective factors are identified in prevalence research, then effective prevention programs could be utilized and developed based on the findings of the research.

Gresko and Rosenvinge (1998) developed and evaluated a school-based prevention program in two Norwegian semi-rural communities. This first involved administering questionnaires in order to identify concerns that might be addressed in a prevention program. They then considered prevention program approaches, essentially whether to adopt a risk prevention or health promotion curriculum. They chose a health promotion focus in order to avoid the negative effects of the interest people have shown for a popular illness such as an eating disorder. From this perspective, they stated that prevention efforts are most successful when school and health authorities work together to teach children and adolescents about eating, nutrition, and developmental changes. In addition, they indicated that it is important to alert youth to media influences and messages that affect self-esteem. They developed an educational package in which they included general information about eating disorders such as the somatic and psychological consequences of eating disorders and dieting as well as topics regarding sociocultural influences, puberty, and "what to do if you suspect an eating disorder." As well, they developed a video called *This is My Life,* in which the above topics were incorporated. On this video, there were interviews with both boys and girls, and a young girl was followed as she developed an eating disorder.

Minimal long-term differences in eating behaviors and attitudes have been identified by some of the prevention program efforts. This is evident in the research conducted by Morena and Thelen (1993). They asked eighty 12-14-year-old girls to view a short video and participate in a discussion about eating disorders. Subsequently, when they measured the girls' knowledge, eating attitudes, and behavioral changes two days later they found significant changes. However, they failed to get similar results in later testing. In other research, similar disappointing results were identified. Paxton (1993) provided structured classes about the eating disorder issues of emotional eating, biological and cultural factors, and weight regulation. Twelve months after these classes, he detected no changes in the participants' eating or weight control behavior. Furthermore, he found no changes with measures of their body dissatisfaction and drive for thinness. Rosen (1989) conducted a study involving a control and an intervention group. The participants received eight sessions in which the topics of decreasing weight-reduction behavior and improving body image were discussed. With later analysis, he found no differences in the weight-control behavior between the control and intervention groups.

Stewart (1998) asserted that effective primary prevention of eating disorders is constrained by our limited knowledge of risk factors, especially as they pertain to development stages. She proposed that the principal challenges involved with the development of effective programs are to identify risk factors and to ensure the material is developmentally appropriate. With this viewpoint in mind, Stewart developed a prevention program that was delivered to 459 girls in three schools. It was formed based on the following considerations: There is a relevant curriculum, there is inclusion of active components to the lessons, and there is age-appropriate delivery. She determined that an ideal age is about 13 to14 because eating disorder issues are most relevant to girls at that age. She also believed that at that age the girls would have reached the developmental level in which they could cognitively and behaviorally make changes. In addition, in this age group, eating disorder concerns might be addressed before they are entrenched at a later age. Stewart incorporated topics regarding developmental challenges of adolescence such as changes in body shape, becoming independent, developing relationships, pressures in school, and developing an identity. She has not yet published her results; however, she likely foundmore compelling results than other prevention program researchers have found because she integrated important developmental concerns into the program.

Stewart (1998) and Smolak Levine, and Schermer (1998) concurred that prevention is best provided at the early teen or elementary level. Smolak et al (1998) asserted that a child might be more receptive to intervention at an early age, especially with regard to his or her thinness schema. They developed a program of ten lessons designed for a fourth grade curriculum which is called, *Eating Smart, Eating for Me*. In these lessons, there was emphasis on the topics: healthy eating, healthy exercising, and awareness of prejudice concerning body fat and overweight people. They reported that they found an effect on children's knowledge but not on their dieting, teasing, eating, or exercising. Despite minimal reported effects, they recommended further attempts at early intervention because of the findings regarding elementary students: Researchers have found body image, dieting, and weight/shape concerns for these youngsters. (Shisslak et al, 1998 & 1999; Smolak and Levine, 1994b; Maloney et al, 1989, Gustafson, Larson & Terry, 1992; & Childress et al, 1993). Many of these researchers discovered that 30 to 40% of elementary school girls have tried to diet and reported having weight concerns.

Media awareness is viewed as another important component of prevention programs. Levine and Smolak (1998) reported that a vast majority of adolescents (especially girls) read fashion and self-improvement magazines. They referred to the huge media influence on teens, "*Seventeen* magazine currently claims a total readership of 11, 000,000. And in a typical American household, the television is on for more than seven hours per day" (p.27). They contended that the media brainwashes their audience into beliefs about beauty, dieting, indulgence, and success. They claimed that women are objectified and slimness is glorified. Whether or not people are actually "brainwashed," one must admit that media provokes within the individual the opportunity to attend to, interpret, and assimilate body image messages. One might also admit that a youth, who has far less living experience, may not be as adept at interpreting media messages. To address the potential overwhelming influences of mass media, media-analysis and media-resistance lessons are often part of school-based prevention programs. They have been applied most successfully for smoking but have also been developed for eating disorders and HIV (Kaufman, Jason, Sawlski, & Halpert, 1994; Altman; 1990 & Murray, Prokhorov, & Harty).

Levine and Smolak (1996) reviewed 10 controlled studies and concluded that exposure to media images does not have an immediate negative effect on adolescents or young women but a potentially long-term one. Coolican (1999) completed research in which she examined the effects of television programs on a normal sample of women. They were presented with the programs *Baywatch* and *The X Files* and then given questionnaires to complete about their eating disorder behaviors and attitudes (EAT-26) as well as other questionnaires intended to measure self-esteem and other related psychological constructs. She found no relationship between the participants' scores and the program they viewed. She concluded that there is less influence on body image in shows such as *Baywatch* than initially hypothesized. However, there is also contrary and convincing research in which the rise in the incidence of AN and BN in young females is attributed to body image messages characterized in television and fashion magazines (Gordon, 1990; Levine and Smolak, 1996; & Stice, 1994).

Martin and Kennedy (1993, 1994) explained the effect of media on young girls. They studied what girls between the ages of 8 and 18 think about themselves while reading fashion magazines. They discovered that for the majority of girls, "There is a process of social comparison involving how pretty the models are and then feeling badly about one's own appearance"(cited in Levine & Smolak, 1998, p.29). They contended that early adolescence is a time in which boys and girls are developing self image and thus have inherent body consciousness. As a result, boys and girls demonstrated increased motivation to use media as a source of comparison. They further proposed that this motivation likely renders them more susceptible to anxieties about their own size, which in turn can lead to disordered eating behaviors and attitudes.

Levine and Smolak (1998) suggested that there are two ways to understand the relationship between the cause of an eating disorder and media messages. The first way to understand the link is called the dual-pathway model, which was developed by Stice (1994). They explained that "Unhealthy messages in the media are reinforced by family and peers, especially when the individual has a low self-esteem, a disorganized self-concept and a perception of being overweight" (p.32). The second model regarding the link between media and eating disorders is the developmental-transitions model. Essentially, in this model, mass media was viewed as an influential factor involved in the transmission of messages regarding body size. Furthermore, it was considered possible that there is an interaction of these messages with the developmental changes the adolescent goes through. The following example better illuminates their reasoning:

> Exposure to television programs and commercials could possibly contribute directly to a ten-year-old girl's schematic beliefs that "fat is very bad." Later, fashion magazines might directly trigger a 12-year-old girl's reevaluation of the importance of attractiveness-as-slenderness in the definition of femininity. Or mass media might contribute more indirectly by serving as a socially approved source of knowledge ("There are diets that really work!") and inspiration ("You can use this exercise machine to transform yourself into a winner with a flat abdomen!") for an already weight-conscious 13-year-old girl as she struggles to make sense of pubertal weight gain and a budding interest in boys (p.33)

Berel and Irving (1996) referred to Austin and Johnson (1996) for an example of how the integration of concepts from developmental psychology, social learning, and media literacy in prevention programs can be applied at both home and school. They developed a Message Interpretation Process model to explain the two pathways through which concrete operational children (ages 7 to 11) internalize televised messages. The first path is a series of questions such as "Is this realistic, am I or are my experiences similar to that person?" The second pathway, which is more of an emotional reaction to the message, is "Do I want to act or be like that person (identify)?" Essentially, Berel and Irving (1996) suggested that parents and teachers can teach their children the understanding of persuasive content in shows and commercials with questions like, "Do real women look like models in advertising?" and by talking back to the television (Levine and Smolak, 1998, p.41).

A significant portion of this prevention program review was focused on explaining the effects of media. This is in part due to the awareness that media is an important influence in most people's lives, whether they live in an isolated community of the North or in a teeming metropolis of southern Canada. Another approach that might be important, especially for isolated communities, is that prevention programs that can be provided in a distant-education format.

Celio, Winzelberg, Wilfrey, Herald, Springer, Dev & Taylor (2000) compare an internet program and a classroom-delivered psychoeducational program designed for the reduction of risk factors for eating disorders in college women. In both programs, many of the topics discussed above were included, such as body image dissatisfaction, excessive weight concerns, dieting or restrained eating patterns, and exercise and nutrition. Media awareness was also encouraged: The participants were asked to observe real women in public and compare them to women seen in fashion magazines. At the conclusion of both programs, Celio and his colleagues found significant effects in terms of reduced risk factors for eating disorders in the internet-delivered intervention. Although this research was based on adults, and thus does not incorporate developmental challenges, it was interesting to consider the results because of the widespread use of computers in schools. It is highly conceivable that an internet-delivered prevention program could also be introduced and successfully applied to concerns regarding eating disorders in adolescents. Such a program might be extremely valuable for isolated communities where available teachers, professionals, and numbers of participants are limited.

Conclusions regarding the efficacy of eating disorder prevention programs are mixed. Some researchers suggest greater success with the programs are possible when attention is given to developmental challenges, media, and sociocultural effects as well as the risk and protective factors relevant to eating disorders. Most of the prevention programs reviewed are school based; however, one internet-delivered program was also reviewed. Ideally, the most effective components of the existing eating disorder prevention programs might be applied to prevention and intervention efforts considered for youth in the Yukon.

Conclusion of the Literature Review

In this review of the literature, current and past understanding of eating disorders from psychological, sociocultural, and biological perspectives were discussed. In addition, the literature and research relevant to the demographic variables of age, grade, gender, ethnic background and diet, and residence were reviewed. Finally, the differences in eating disorder occurrences found between youth in rural and urban settings were described.

Within the section of literature review regarding past and current understanding, clinical eating disorders and other eating problems were defined. In addition, there were a range of topics and approaches taken with eating disorders included. It was contended that disordered eating behaviors and attitudes, and the eating disorders themselves, are multidimensional and that biological, social, and psychological aspects need to be considered in identification, prevention, and treatment efforts. In addition, it was hoped that with this broad and diverse review, the reader had a variety of approaches and explanations to consider in addressing the eating behaviors and attitudes that were identified by this prevalence study.

The healthy and natural psychological, sociocultural, and physiological eating processes were included for a few reasons. First, this discussion was included to provide the reader a starting point by which to recognize dysfunctional eating and behaviors. Second, in the context of this research, adolescents were provided workshops on eating disorders in which the normal processes of eating were discussed at an age-appropriate level. Finally, the normal eating processes were discussed with the recommendation that prevention efforts are based on a "health" model as opposed to a "disease" model.

In the literature review of specific adolescent concerns and demographic variables investigated in this research, gender and age were identified as key risk factors. It was noted in the literature review that many of the findings are based upon studies of women and girls. This is primarily due to the higher prevalence of eating disorders in the female population and may also be attributed to lack of professional agreement regarding concerns of eating disorders in males.

Other demographic variables of ethnic background, ethnic diet, and residence, as well as differences found between urban and rural youth, were discussed by drawing upon literature and research from a variety of disciplines. This approach was taken because there are limited and inconclusive findings regarding these variables in the eating disorder literature. Some researchers who have investigated ethnic background have suggested that minority individuals are more likely to exhibit eating problems and eating disorders as their level of acculturation increases.

The topics of percentage of ethnic food in the diet and residence were discussed from a perspective of considering the potential positive and negative impacts of each factor on eating behaviors and attitudes. This approach was taken in the spirit of recent research: to identify protective and risk factors involved in a range of disorders, and in light of the recent "resiliency" research. Essentially, these seldom-researched topics might be added to eating disorder data and be applied to prevention initiatives. Literature regarding the impact of these demographic variables on people, in particular Aboriginal and Non-Aboriginal Yukoners and other Northerners, was included to describe the unique challenges they face.

In the following two chapters are discussions of the methods used and the presentation of data analysis results. In the conclusion chapter, results of this study are discussed in light of eating disorder prevention programs and the unique characteristics and challenges of youth in Whitehorse.

CHAPTER III: Research Methods

Introduction

The essential methodological tasks involved in this investigation of disordered eating behaviors and attitudes of the Whitehorse youth were as follows: (1) To choose an appropriate approach and questionnaire in order to assess disordered eating behaviors and attitudes. (2) To identify and include questions regarding the impact of demographic variables on the measures of disordered eating behaviors and attitudes. The variables examined in this study were the students' EDI-2 results and age, grade, gender, ethnic background, school, ethnic diet, and residence. In addition, the EDI-2 results from Whitehorse youth and youth from larger centres in Ontario and northeastern United States were compared in order to explore potential differences between urban and semi-urban or rural youth.

The logistics of running the study was broken down into several tasks characteristic of convenience sampling and participant recruitment procedures. An appropriate sample was identified and their representativeness for the larger population of youth in Whitehorse was considered (Yukon Bureau of Statistics, 1996, 1999). Approval from the University of Alberta ethics committee and the Yukon Department of Education was then attained. Following approval, educative workshops on eating disorders were provided to the students of the schools, at which time individual parental consent forms were distributed to the students. The distribution and collection of parent and student consent forms, the administration and scoring of the EDI-2 questionnaires, and the imputing and analysis of data were involved in data collection. In this chapter, each of these tasks is described.

Selection of a Method

Sonquist & Dunkelberg (1977) stated that in survey research one should be able to test hypotheses, evaluate programs, describe populations, and build models of human behavior (p.1). Questionnaire administration is a type of survey study because one can test hypotheses and answer questions regarding a population and because one can describe behaviors or prominent concerns. The questionnaire method was selected for this study in order to access a large number of individuals in an efficient and economical manner.

Schoemaker (1998) suggested that when using an eating disorder questionnaire, it should be considered only a first step in answering questions regarding prevalence. Prevalence is usually described as the actual number of cases in a particular community over a set period of time. The usual requirements for diagnoses of eating disorders are results from questionnaires, and the collaborative information gathered from interviews, and clinician and physician's assessments. For the purposes of this study, the EDI-2 was used to attain an initial understanding of eating disorder concerns of the Whitehorse youth.

The Measurement Instrument

There are several questionnaires or scales available for measuring eating disorders and related concerns such as body image, health and exercise practices. Some of these are used to assess specific eating disorder behaviors such as the Binge Eating Questionnaire (Ordman & Kirshenbaum, 1985), the Weight Management and Eating and Exercise Questionnaire (Mintz & Betz, 1988), the Anorexic Behavior Scale (Slade, 1973), and the Bulimic Investigatory Test (Henderson & Freeman, 1987). Two of the most commonly accepted measures of eating disorders are the Eating Attitudes Test (EAT) and the Eating Disorder Inventory (EDI). The EAT was developed in 1983 by Garner and Garfinkel. The EDI and its expanded version, the EDI-2 was developed between 1984 and 1991. The initial EDI was developed by Garner and Olmstead; the latter revision by Garner alone.

The following criteria were used to select the questionnaire for this present study.

(1) It must be appropriate for a younger population. Students from grades 7 to 12 are enrolled in the Whitehorse high schools. Therefore, it was considered possible that students could be as young as 11 to 12 years of age. It was viewed important that the test items be understandable for the youth in the lower grade levels, taking into account lower levels of reading ability and maturity.

(2) It should be extensive enough to include a broad range of characteristics. In that regard, it should not be too specific, such as some questionnaires that are exclusively used to assess anorexia, bulimia, compulsive eating, or psychological concerns such as body image.

(3) It should be in a self-report format so it can be group administered. It was believed that the ideal way of obtaining a depiction of the prevalence of disordered eating behaviors and attitudes would be to assess as large a group as possible.

(4) It must have established norms for junior high school and high school students, and the reliability and validity of the test must be clearly established.

(5) It must be appropriate for use with both males and females.

(6) It must be appropriate for administration to the general, non-clinical population.

(7) It must be known to be sensitive enough for the identification of disordered eating behaviors and attitudes in the general population.

There was also examination of the literature on the eating disorder questionnaires as part of the selection process. The author of *Sex and Gender Issue Test Review* (Beere, 1990) cautioned researchers considering a scale or questionnaire of eating disorders to carefully examine the studies cited in which they had previously been used.

The selection of the questionnaire was narrowed down to the Eating Attitudes Test (EAT) and the Eating Disorders Inventory-2 (EDI-2) based on the criteria above, and based on the literature reviews of them. The *Eating Attitudes Test* was referenced a greater number of times than was the *Eating Disorder Inventory –2*. However, the *Eating Disorder Inventory –2* also had several citings. Garner and Olmsted (1984) compared the EAT and the EDI. They noted that the approach taken by the test developers with scale development was different for both, although both have since been validated by numerous studies. They reported that the EAT was developed based on an empirical approach, and the EDI-2 was developed based on a theoretical approach. Their conclusions for both were as follows:

> The EAT is a sound measure of a range of symptoms common in anorexia nervosa, and the EDI focuses more on the specific cognitive and behavioral dimensions that may meaningfully differentiate subgroups of patients; or which may distinguish those with serious psychopathology from "normal" dieters (p. 9).

The EAT, like the EDI-2 test, had much to offer for this study, given that it was well documented as a reliable and valid test and screen of eating disorders. It has been used successfully with a variety of populations in the identification of both the propensity and the prevalence of eating disorders (Brooks-Gunn & Warren, 1985; Button & Whitehouse, 1981; Carter & Duncan, 1984; Carter & Moss, 1984; Clarke & Palmer, 1983; Cooper & Fairburn, 1983; Eisler & Szmukler, 1985; Garner & Garfinkel, 1980; & Steinhausen, 1984). One drawback noted with both the EAT and the EDI-2 was that there are some items that are inapplicable to males, such as "I have regular menstrual periods."

A decisive factor in choosing the EDI-2 over the EAT was that the EDI-2 was suitable for the younger students in this study. The EAT was developed for high school students. Traditionally, the students in high schools start in grades 9 or 10 and finish in grades 12 or 13. The items on the EDI-2 were developed for a literacy level corresponding to grade 5. Consequently, it can be administered to youth as young as 11 years of age.

Garner (1991) provided information concerning reliability and validity studies with the EDI and EDI-2. He stated that a final criterion for the EDI subscales is that there must be a coefficient of internal consistency of at least .80 for an eating disorder sample. He reported that Garner & Olmsted (1984) found reliability coefficients between .83 to .93 for the original subscales. He also indicated that their findings were recalculated using updated samples and that the coefficients are much the same.

Garner cited studies regarding examination of the EDI's internal consistency with the previous and original data. Welch (1988) reported lower alphas ranging from .70 to .81. With non-patient groups, Racitie and Norcross (1987) and Vanderheyden, Fekken and Boland (1988) found reliability to be similar to those of the initial validation study. Shore and Porter (1990) reported lower reliability estimates on some scales and with some age groups. They found a reliability score of .70 for the *Maturity Fears* scale with younger persons and a reliability score of .70 for males on the *Perfectionism* and *Interpersonal Distrust* scales.

Garner (1991) described several analyses that were utilized in the establishment of the EDI-2 validity. Item selection, investigations of the fit with the criterion groups, and the fit between patients' EDI-2 subscale scores and clinicians' diagnoses were included in these analyses. As well, Garner identified significant differences between groups of AN-R and AN-B subjects on the *Bulimia* subscale. Convergent and discriminant validity was demonstrated by the pattern of correlations among EDI subscales and among a number of other measures with different degrees of conceptual overlap with EDI subscales. In the EDI-2 manual, Garner cited EDI-2 studies regarding the content validity, criterion-related validity, concurrent validity, construct validity, discriminant and convergent validity, and factor analysis.

Other review and research sources were noted for discussion of the applications of the EDI-2. It is the most often reviewed eating disorder questionnaire in test review sources such as *Buros and Mental Measurement Yearbooks*. It was the only eating disorder test listed in the *Twelfth Buros Mental Measurements Yearbook* (1995) and in *Tests in Print IV* (Buros, 1994). The frequency with which the EDI-2 is reviewed is a notable indicator of its widespread use in clinical and research situations. In addition, the EDI-2 is reviewed along with the EAT in *Sex and Gender Issues: A Handbook of Tests and Measures* (1990), *Tests: A Comprehensive Reference for Assessments in Psychology* (1997), and *Test Critiques* (1994).

Philip Ash and Steven Schinke (1994) indicated that the strengths of the EDI-2 are sensitivity to clinical change, usefulness for gathering information of current and historical diagnostic relevance, and inclusion of norms for clinical and non-clinical populations. Brookings (1994) reviewed the advantages and disadvantages of the EDI-2. He stated that the EDI-2 is popular because of the multidimensional approach taken by the test developer. Essentially, Garner (1991) included a broader array of etiological factors and treatment effects than do Garner and Garfinkel (1979) with their unidimensional measures on the EAT. Professor Brooking's concerns about the EDI-2 were that further multitrait-multimethod studies are needed and that some of the core scales have not been validated for clinical assessment and intervention. He also noted that initial normative samples were too small, but he acknowledged that in the revised manual Garnier (1991) included larger and more representative samples. He concluded, "… that despite some problems the EDI-2 has much to recommend as a predictor and outcome measure" (p.232). He summarized that key advantages of the EDI-2 manual are the inclusion of extensive data and a factor analysis, in which the test author demonstrated distinct, factorally valid subscales. He also indicated that because of the popularity of the EDI there is a sizeable database of a variety of populations.

Garner's (1991) descriptions of the EDI-2 are helpful in the explication of the EDI-2. He described it in the following way:

> It is a widely used self-report measure of symptoms commonly associated with anorexia nervosa (AN) and bulimia nervosa (BN). It is an easily administered self-report measure that provides standardized subscale scores on eight dimensions that are clinically relevant to eating disorders. It consists of 64 items and 27 new items on three additional provisional scales presented in a six-point format requiring respondents to answer whether each item applies "always," "usually," "often," "sometimes," "rarely," or "never." (p.5)

Garner (1991) stated that the EDI–2 is a questionnaire that was developed on the premise that eating disorders are multidetermined and multidimensional. Initially, it was comprised of three subscales intended to measure one's attitudes and behaviors associated with eating, weight, and shape and five subscales intended to assess the psychological traits characteristic of or clinically relevant to eating disorders. These scales have since been supplemented with the provisional scales of *Asceticism, Impulse Regulation*, and *Social Insecurity*. The physical, social, and psychological aspects involved in eating disorders are reflected the EDI-2 scales and their respective items.

Garner (1991) indicated that the EDI-2 is intended to measure relevant psychological and behavioral traits consistent with a multidimensional understanding of eating disorders. According to Garner, "It is aimed at the delineation and precise measurement of certain psychological traits or symptom clusters presumed to have relevance in the understanding and treatment of eating disorders. The EDI-2 provides a psychological profile that is consistent with the understanding of eating disorders as heterogeneous syndromes" (p.1). The author also stated that although there are a number of studies in which total EDI scores are computed by summing all scores across subscales, each EDI subscale is intended to measure a conceptually independent trait and that total score analysis may affect interpretation. In addition, he cautioned against using only certain items or selected subscales. However, Garner acknowledged that in some studies there is evidence of a relationship between total EDI scores and psychopathology measured with other psychometric instruments (Heilbrun & Hausman, 1990& Yate, Sieleni, & Bowers, 1989).

Descriptions of the EDI-2 subscales and its provisional scales are documented in Appendix 3. These were drawn from the EDI-2 manual explanations provided by the test author, Garner, and from the discussion provided about each scale in Brookings' (1994) review.

What was particularly interesting about the EDI-2 psychological constructs was that they are characteristic of problems that all people deal with to a certain degree, especially adolescents. For example, developmental and adolescent research is replete with examples of youth dealing with maturity fears, especially in early adolescence. For example, Anna Freud (1965) is attributed with the term "flight from womanhood," which she used to describe a girl's failure to eat as one denial response to growth (p.105). Other constructs such as "impulse regulation" are considered characteristic of many youth. Offer and Sabshin (1990) who edited a book on adolescent psychology, suggested that impulse regulation concerns are normal for the adolescent and should not be considered unhealthy. Constructs regarding preoccupation or dissatisfaction with one's self, in particular one's body, are typical of the both adults and adolescents. However, body image concerns are likely more pertinent in adolescence, because a major challenge for the adolescent is the evaluation and definition of identity.

Administration Guidelines and Details

The EDI-2 can be administered to individuals and groups and has been used with people as young as 11 years of age. Garner (1991) cited the following successful research of youngsters conducted by Fabian and Thompson (1989); Faust (1987); Garner, Garfinkel, Rockert, and Olmsted (1987); and Shore and Porter (1990). Garner added that the provisional scales have not been validated with children younger than 12 years of age. In the test manual, he described administration instructions and ideal testing conditions. Essentially, participants are to be informed that the EDI-2 is utilized for the measurement of attitudes, feelings, and behaviors related to eating. Participants are also to be informed that there are no right or wrong answers, and they are to be given as much time as necessary. Garner recommended that respondents be given the opportunity to ask questions and to ask for clarification of items.

The sample population of adolescents in Whitehorse (n=454) were given instructions as indicated in the manual and on the questionnaires. This researcher distributed and administered the EDI-2 questionnaires. Students were encouraged to complete the items on their own; however, there was discussion among some students in response to items. There were two students out of the entire sample that required help from their learning assistance teacher. They were read the items aloud but responded privately. Some students asked for clarification of items, and they were provided explanations or examples. Particular items that required clarification are noted below. Generally, students from all the age groups asked for either the explication of a particular word, or what the term meant in the context of their age and gender. Some examples of students' questions are as follows:

> *I feel I am ineffective as a person.* Some students asked for explanations of the word "ineffective." The explanation given was " when you feel that you cannot do anything well."
>
> *I think about bingeing (overeating).* Teenage boys asked if their consumption of a large amount of food at one time qualified as bingeing. Some students misread "bingeing" as "binging" and didn't know what "binging" meant. The

meaning of the word was clarified for these students.

I have close relationships. Students asked if this item was applicable to all relationships or just peer relationships. They were encouraged to consider all significant relationships.

I wish I could return to the security of childhood. For the most part, younger students asked about this item, some indicated that they felt that they were still children. They were encouraged to consider the earlier childhood years when their parents were more involved in their care.

I get frightened when my feelings are too strong. Students asked what this meant. Examples were given such as, "Perhaps you get scared when you feel too much emotion such as too much happiness, fear, or anger."

I like the shape of my buttocks. Many male teenagers were amused with questions regarding the body. They were encouraged to respond to the items with their estimation of like/dislike of parts of the body.

Along with EDI-2 items on the questionnaire, a label was applied to the top of each of the answer sheets in order to collect the demographic information investigated in this study: age, grade, school, ethnic background, ethnic diet, and residence. Some students required clarification regarding demographic questions, in particular the questions regarding ethnic background, percentage of ethnic food in the diet, and residence. Some students indicated they did not know what their ethnic background was. They were encouraged to refer to their parents' last names and if they were still unsure, to respond with "Canadian." Regarding ethnic diet, they were asked to determine if they ate an ethnic diet related to their own ethnic background. Youth were advised to put 0% if they were not aware of any ethnic diet. The variable residence did not require as much clarification. Students were informed that if they had to leave their family and community to attend school they should indicate "yes." For all requests of clarification, students were given examples in order to illustrate the intent of the question or item.

The Sample

The Yukon Department of Education and each school's administration were contacted for permission to collect data. Initially, they were hesitant to allow the study be run in their schools and wanted to ensure that appropriate procedures were followed. They were willing to allow this research project to proceed, provided the following conditions were met: (1) This researcher was involved in the entire study: explanation of eating disorders, data collection, and data analysis; (2) The students were provided with a class about and opportunity for discussion of eating disorders; (3) The students and teachers were provided with a list of psychologists and other mental health practitioners that they could contact in the event that a student had an eating disorder or related concern; and (4) The workshops and questionnaires could be considered appropriate components of the curriculum. These conditions were met, and this researcher voiced a willingness to return to the schools to provide an explanation of the results of the study.

The sample design was restricted to convenience sampling because the Yukon Department of Education and each school's administration specified which classes of students I could meet with.

(1) Principals in the two of the high schools allowed the administration of the questionnaires to students in Career and Personal Planning (CAPP) classes because eating disorders were considered to be a subtopic of nutrition curriculum materials. At present, there is not a set curriculum including eating disorders, although some individual teachers have included discussions of them in their CAPP classes. With an informal hand count of students, only about one-quarter to one-half of the students indicated previous classes or instruction about eating disorders. There were one-half to three-quarters of the students who acknowledged some level of understanding, in varying degrees, of eating disorders.

(2) In one high school, the curriculum is geared towards the experiential studies of drama, music, art, and sciences. In this school, the CAPP curriculum is integrated into their classes. Students from four of the six classes in this school participated in the study; the other two were unavailable during the research period due to experiential outings.

(3) The administration and staff of one high school indicated that the CAPP curriculum is integrated into mandatory religion classes. They provided the entire student body. Although the sample size was largest from this school, there was no need to apply random selection procedures, as the size was still considered manageable.

Unfortunately, with convenience sampling there is not an opportunity to apply random selection techniques. Therefore, speculation regarding the generalizability and representativeness of the sample of students is limited. However, because of the mandatory requirement that students must take CAPP and/or religion classes, potential bias regarding sample selection was considered minimal. In a sense, the sample was representative of Whitehorse youth because all students who participated were from a variety of racial and SES backgrounds. The reasons students did not participate was that they had already taken their required class in a previous term or were absent for other health or scholastic reasons.

Students in Whitehorse begin to attend high school in either grade 7 or 8, depending on the ceiling grade of their elementary school. The students involved in this study were from the three major high schools and one annex school in Whitehorse. The annex school is described as a site where youth can attend experiential programs not offered at the other schools. Its students are drawn from the population of the other three schools. There was a total population of approximately 800 students in two of the schools. In the other high school, there was a total population of approximately 400 students. The total population of the annex high school was approximately 120 students.

There were 454 students who participated in this study. The precise numbers of students categorized according to age, grade, gender, school, ethnic diet, percentage of ethnic food in the diet, and residence are in Table 1. There were 209 males and 244 females who completed the questionnaires. The largest age group was found to be the students between the ages of 14 to 16. It was found that 60.9% of the students who participated in this study were from one school. The largest grade sample was grade 9 students, although all grade groups were adequately represented.

There were six ethnic groups. The largest groups were the students with no ethnic background identified other than "Canadian," and with students who report European ethnic background. The other ethnic groups of Aboriginal, Asian, and African ethnic background were significantly smaller. The students with Aboriginal ethnic background were the largest minority group at 11.3%. The numbers of students acknowledging a higher percentage of ethnic food in their diets were much less than those with little or no ethnic diet indicated.

Most students were still living with family and community. There were 11% of the students who indicated that they left home and community to attend school. There were 6.4% of the students who did not respond to the question pertaining to residence.

The representativeness of the 454 youth for all the Whitehorse youth was examined by noting Yukon and Whitehorse statistics. According to the *Community Profiles of the Census 1996* and the *Monthly Yukon Population Estimates* (1998 & 1999) published by the Bureau of Statistics, there were approximately 31,000 people in the Yukon and 19,000 people in Whitehorse around the time of the study. There were 1540 males and 1415 females between the ages of 10 and 19.

Students were required to attend schools within their districts. Each district was reported to have a variety of social economic levels and household characteristics such as family size, level of parents' education, occupation, social economic status, marital status, and ethnic origin). The Aboriginal population of Whitehorse was 2,605 persons and the Non-Aboriginal population is 16,455 (Statistics Canada, 1998). There was a range of visible ethnic minorities in Whitehorse. The groups and numbers of people in these groups were described by Statistics Canada (1998). There were 185 South Asian Canadians, 130 Chinese Canadians, 190 Southeast Asian Canadians, 90 Filipino Canadians, and 70 African-Canadians (Statistics Yukon, 1996).

Table 1

Numbers and Percentages of Whitehorse Students on Variables of Gender, Age, Grade, School, Ethnic Background and Diet, and Residence

Independent Variables	Frequency	Percentage
Gender		
Males	209	46.1
Females	244	53.9
Age		
11	1	0.2
12	42	9.3
13	82	18.1
14	86	19.0
15	86	19.0
16	91	20.1
17	49	10.8
18	14	3.1
19	2	0.4
Grade		
7	67	14.8
8	77	17.0
9	102	22.5
10	80	17.7
11	90	19.9
12	37	8.2
School		
1	276	60.9
2	72	15.9
3	45	9.9
4	60	13.2
Residence		
At home	374	82.6
Away from home	50	11.0
Ethnic Diet Percentage		
0	288	64.3
25	91	20.1
50	35	7.7
75	23	5.1
100	11	2.4

Table 1 cont.

Ethnic Background*	N	%
1. None reported	141	31.1
2. Aboriginal	24	5.3
3. Aboriginal/other noted	27	6.0
4. European	241	53.2
5. Asian	13	2.9
6. African	7	1.5

*Students identified themselves as Canadian with or without ethnic background.

Data Collection

Permission was obtained from the Department of Education in February 2000. Shortly thereafter, each school's administration and teaching staff gave permission and indicated appropriate times and dates. The numbers of students participating varied in each of the schools. As noted earlier, some of the schools' principals and teachers required a fit of the study with their curriculum. With most of the schools, they attempted to provide student samples from all grades. There were 454 students who completed questionnaires; this was considered a substantial proportion of the Whitehorse youth. In recent statistical reports, the entire Whitehorse high school population was estimated to be approximately 2700 students (Bureau of Statistics, 1998, 1999).

Data collection was preceded by classroom presentations on eating disorders. In one school, the students were given the classroom presentations following the EDI-2 administration. This deviation was considered a potential control for the possible effects of the presentations on students' response style. The presentations and questionnaire administration took place in February and March 2000. When the presentations were given to the students, the classroom teachers were present and often participated in the discussion. In one school, the school counselor attended each of the sessions.

During the presentations, this researcher defined each of the eating disorders, provided explanations regarding their onset and continuation, and directed students to prevention and intervention steps they could take for themselves. Because the presentations were provided in the context of CAPP curriculum, discussion was also extended to career and research topics. Psychologists' work and the training required was described. In addition, this researcher explained what research is and discussed the objectives of this particular research project. This discussion regarding the research project was also considered an opportunity to ensure that the ethical requirements of informed consent were addressed. To further deal with ethical issues of informed consent, students were given the written details of the study along with the parental consent forms. These were read aloud and explained to the students to ensure understanding. Copies of the parent and student consent forms, and an outline of the presentations are provided in Appendix 1 and 2.

Data collection took place 1 to 3 weeks after the eating disorder presentations. At the school in which the presentations and data collection were conducted on the same day, parental consent forms had been explained and distributed by their teachers one to two weeks prior to the presentation/data collection days. Data collection was commenced in late February 2000 and completed in late March 2000. The EDI-2 was administered during class time and only after the students had signed their consent forms and had returned signed parent consent forms.

The ethical requirements for most research projects conducted with people are that informed consent and confidentiality are ensured. To secure anonymity, students were asked to leave their names off the forms, and the consent forms and questionnaires were collected separately. In addition, students were advised that their participation was voluntary and that if they chose to decline participation, they could work on something else but must either stay in the classroom under their teacher's supervision or go to the library. Out of the entire sample, only three students opted not to participate. Overall, the staff and students of the schools were very accommodating, interested in the topic, and helpful. The presentations and data collection were easily achieved.

Scoring Guidelines

Garner (1991) stated that the primary use of the EDI-2 is for the clinical evaluation of symptoms associated with eating disorders. He recommended the use of the profile comparisons for clinical use. In the context of this prevalence study, there was an examination of profiles as well as the examination of elevations for each of the subscales.

Garner (1991) addressed the issue of choosing a cutoff score in both clinical and research settings. He stated that the decision regarding the precise cutoff score to employ depends on the purpose of screening. He reported that when one uses a relatively high or conservative cutoff score there is an increase in the number of false negatives and a reduction in the number of false positives. He recommended use of the normative data in the test manual when determining appropriate cutoff scores. He added that another approach to differentiating between normal individuals and individuals with disordered eating behaviors and attitudes, is to examine the scale elevations on the scales most often associated with an eating disorder. He indicated that the EDI-2 scales most often identified for persons with an eating disorder, and most effective for differentiation of normal persons from persons with eating disorders are *Drive for Thinness, Bulimia*, and *Body Dissatisfaction*. To substantiate the validity of Garner's claims regarding one of these scales, Vanderheden and Boland (1987) found that they were able to correctly classify 73% of various levels of disturbed eating with the *Drive for Thinness* scale.

Data Preparation and Analysis

There were 454 EDI-2 questionnaires completed by the students, and each one was hand-scored. This was a sizeable amount to score, and with hand scoring there is always a potential for some amount of human error. To reduce error, templates were developed in order to isolate one to three EDI-2 subscales at a time. Scoring was completed by this researcher and with the assistance of three adults who were instructed about questionnaire scoring procedures.

The EDI-2 subscale results and the demographic data responses were imputed into the SPSS-10 computer program for data analysis. The data was analyzed for scale elevations based on the norms provided in the EDI-2 for cutoff scores, and based on norms for measures of central tendency and variability.

Norms that are referred to in the EDI-2 Professional Manual (Garner, 1991) were based on those generated from eating disorder populations and from samples of non-patient high school boys and girls. Garner (1991) recommended use of appropriate age and sex norms from the studies of Rosen, Silberg, and Gross (1988) and Shore and Porter (1990). Significant findings of their research efforts are that they identified gender differences on the EDI-2 and found that younger students differ from older ones (p.19).

The high school norms which were referred to for the analysis of EDI-2 raw scores and percentiles, documented in the EDI-2 manual are based on a study by Rosen, Silberg, and Gross (1988) of 698 girls and 675 boys. Students from three public high schools in northeastern United States participated in this study. The schools are situated in three sites, a semi-rural town, the suburb of a major metropolis, and a major metropolis. The norms for eating disorder groups were based on a sample of 889 patients who had been diagnosed with an eating disorder. Garner (1991) also provided norms for each separate eating disorder; however, he recommended use of the norms for the combined eating disorder groups.

The results from the Rosen, Silberg, and Gross study (1988) were referred to in this research because norms for both high school males and females were provided. Percentile equivalents at the 75 to 99 percentiles were considered to be an indication of the most problematic concerns. Students scoring below the 75th percentile were determined to be in a normal range, and thus were not perceived as having a propensity for an eating disorder. Consult Appendix 4 for norms regarding eating disorder groups and for norms for high school males and females.

Each of the student's EDI-2 profiles was analyzed. The objective was to identify how many students scored above the 75th percentile according to norms for high school students on eight of the subscales (Rosen, Silberg, & Gross, (1988), and according to eating disorder norms on all 11 EDI-2 subscales. Essentially, for each individual student's profile, the number of subscales in which the students scored above the 75th percentile was tallied. A second step of this profile analysis involved the identification of the frequency with which the Whitehorse students scored above a cutoff score on each subscale. The cutoff score used here was determined by identifying the lower end of scores in the eating disorder norm group as depicted on the EDI-2 profile forms. This analysis allowed the identification of specific eating disorder concerns most problematic for the Whitehorse students. A sample EDI-2 profile form is provided in Appendix 7.

The EDI-2 results for girls and boys that were provided in the manual and based on the research by Shore and Porter (1990), and Rosen, Silberg and Gross (1988) were used for t-tests comparisons with Whitehorse student sample. Shore and Porter (1990) described the EDI-2 subscale means and standard deviations for elementary and secondary school students in Windsor and Essex County, Ontario. Their subject sample included 231 girls between 14 and 18 years of age, 183 girls between ages 11 and 13, 63 boys between ages 14 and 18, and 133 boys between ages 11 and 13. The youth who participated in the Rosen, Silberg and Gross (1988) study included students between grades 9 to 12 from schools in northeastern United States. The measures of central tendency and variability from the Shore and Porter (1990) and Rosen, Silberg and Gross (1986) studies are included in a section of the data analysis chapter.

The demographic information collected on the questionnaires was identified as the independent variables of this study. They were: age, gender, grade, school, ethnic background, ethnic diet, and residence. The students' results on the EDI-2 subscales were analyzed according to each of these categorizations. This involved the identification of the frequency with which students from each demographic category scored above the cutoff. In addition, 68% confidence intervals regarding these findings were calculated. Thus, predictions were made with 68% confidence that the EDI-2 results found with this sample of Whitehorse students were representative of Whitehorse youth. In summation, the data analysis procedure was intended to examine the individual, group, and overall disordered eating behaviors and attitudes of the Whitehorse youth.

Limitations and Delimitations of the Research

In this section, the preliminary limitations and delimitations of this research are discussed. Specifically, there is discussion of the questionnaire administration procedures, the utility and restrictions of the EDI-2, the student sample and their characteristics, and the data analysis procedures.

Questionnaire administration and retrospective studies are considered the principle methods one can use to determine the prevalence or likelihood of eating disorders in large populations. There are problems with both investigative procedures. Shoemaker (1998) stated that the possible sources of distortion in the measurement and methodology of retrospective studies are the following: the causal interpretation of correlations, hindsight interpretation, and negative selection (Cohen & Cohen, 1984; Shaw & Garfinkel, 1990; Vandereycken & Meermann, 1992; Fairburn, Welch, Norman, O'Connor & Doll, 1996).

As noted earlier, the EDI-2 was the eating disorder questionnaire used in this study. Questionnaire administration was considered the most effective means of identifying prevalence in large groups of the general population (Garner, 1991). However, the results from questionnaires are usually not considered diagnostically sound indices of actual eating disorder occurrences. Garner (1991) recommended that questionnaires be utilized as a first step in diagnosis followed by clinical interviews and other collaborative information such as physicians' and therapists' assessments. Therefore, one limitation of this study is that there were no follow-up interviews and additional testing conducted. These procedures were not feasible in the context of this research. Instead, the results were considered indicative of disordered eating behaviors and attitudes and as preliminary measures of actual eating disorder prevalence.

Another limitation regarding questionnaire use, specifically with the use of the EDI-2, was that there are no indices for participants' response styles. Shoemaker (1998) indicated that sole use of a questionnaire for diagnostic purposes is problematic because of the denial tendency that is characteristic of eating disorder persons. Ideally, validity scales are consulted to identify response styles, such as fake-good, fake-bad, denial, or inconsistency. Because there are no such scales on the EDI-2, each individual student's validity could not be verified in this research project. Consequently, the findings from this research were based on the unverifiable premise that the students completed them honestly and consistently. In the EDI-2 manual, Garner (1991) stated that "Reassurance and a positive-test-taking set may be provided by indicating that the EDI is a standardized instrument that has been completed by thousands of people" (p.7). Students were given appropriate instructions and encouragement regarding questionnaire completion; however, the inability to assess the validity of responses is a potential limitation.

A further limitation of the EDI-2 is that while there are subscale scores, there is no overall score; therefore, the results cannot be compared to findings from studies using questionnaires that have overall scores such as the EAT. Instead, Garner (1991) indicated that there are two methods of analysis possible: (1) The analysis of individual profiles over the 75th percentile according to selected norms; (2) The analysis of scores on key scales most identified with eating disorders such as *Drive for Thinness*, *Bulimia*, and *Body Dissatisfaction*.

Another problem is that, despite the reputed validity and reliability of the EDI-2, it was designed to identify eating-disorder behaviors and attitudes with several constructs, and therefore it may overlap with other psychological constructs. For example, Garner (1991) indicated concerns regarding some of the scales: The provisional scales have not yet been normed for younger ages, bingeing and purging are not entirely differentiated on the *Bulimia* scale, and the *Maturity Fears* scale is primarily intended for use with older teens and adults.

Further aspects regarding the limitations and delimitations of the EDI-2 also need to be addressed here. First, I review the reason why this psychometric instrument was selected, and then I discuss how the test was used to fulfill the study's objectives.

The key advantage noted in choosing the EDI-2 for this research project was the fulfillment of primary criteria required for this study: that it can be administered to the Whitehorse age group of 11 to 19 years of age. As well, as test reviewers indicated, validity and reliability of the EDI-2 are evident in a number of research efforts (Garner, 1991). A final reason for the fit of the EDI-2 with this research was that it is intended for measurement of behavioral and psychological factors that have consistently been identified in the research of eating disorders, such as maturity fears, drive for thinness, bulimia, and body dissatisfaction. Furthermore, because one can determine psychological characteristics and specific eating behaviors and attitudes with EDI-2, prevention and intervention efforts can be focused on specific identified concerns.

A recent qualitative study called *An Eating Disorder Needs Assessment* was completed in isolated Northern B.C. communities with demographics similar to the Yukon. The reported findings were that both parents and professionals indicated a concern about eating disorder occurrences and noted the lack of resources for prevention, intervention, and treatment (Smye, Niblock & Anderson, 1998). Ideally, the results from this present research can supplement their research and be applied to better understanding eating disorder concerns in the North.

The sampling techniques also need be considered in this discussion of limitations and delimitations. The number of students from each school varied. From one school, 60.9% of the students participated; whereas considerably fewer students from each of the other schools participated. However, in all these schools the sample was drawn from mandatory CAPP and religion classes. Therefore, students came from a range of cultural and socioeconomic groups and were considered fairly representative of the Whitehorse youth.

The limitations and delimitations noted in the data analysis were that a range of analyses were used to identify prevalence, to compare the Whitehorse youth with the other youth, and to investigate the variables of age, gender, grade, ethnic background, ethnic diet, and residence. The results were analyzed with frequency counts of students scoring above percentile and cutoff scores and with the statistical results from the t-tests. It was believed that the application of frequency analysis would allow the discernment of overall and group population concerns.

Chapter IV: Data Results

In the previous chapter, methods involved in data collection and a preliminary outline of the data analysis approach were discussed. In this chapter, the results of the analyses are presented and discussed.

This research was completed with the objective of determining the prevalence of disordered eating behaviors and attitudes for the Whitehorse youth. As well, the EDI-2 results for the Whitehorse youth were compared to the EDI-2 results for youth from Ontario and from northeastern United States that were cited in the manual. This analysis was performed to compare differences between youth in smaller, less centralized communities with youth in larger, more centralized communities. In addition, another objective was to identify concerns for each of the groups of Whitehorse students, categorized by the variables of age, grade, gender, ethnic background, ethnic diet, and residence. Finally, to ensure that the students from each of the Whitehorse schools were representative of the Whitehorse youth, their EDI-2 results categorized by school were analyzed. The school results are presented below.

School

Research Question: What is the prevalence of disordered eating behaviors and attitudes in students in each of the Whitehorse schools?

The students that participated in this research were from four schools in Whitehorse. The numbers of students in the schools were unequal; 60.9% of the students came from one school, and less than 20% came from each of the other three schools. The frequency with which school-categorized students scored above the cutoff on the EDI-2 was analyzed. Minimal differences were identified between the students from each of the schools. Furthermore, when 68% confidence intervals were calculated, few significant differences were noted: Schools 1 and 2 scored more frequently than School 4 on *Bulimia,* and less frequently on *Aestheticism.* Given these results, it was concluded that these students were representative of the Whitehorse youth. It was also concluded that school was not a potential extraneous variable.

Description of the Whitehorse Sample Based on Analysis with SPSS-10

Measures of central tendency and variability on the EDI-2 subscales for the Whitehorse students are provided in Table 2. The medians of the students were consistently lower than their means on most of the subscales. This finding was considered to be evidence that the Whitehorse youth were positively skewed on the EDI-2. This was not considered atypical because Garner (1991) stated that the assessment of normal populations for eating disorders often results in positively skewed distributions. For example, this "positive skew" pattern was evident in the research conducted by Shore and Porter (1990) and Rosen, Silberg and Gross (1986) with high school youth.

Table 2

*Means, Medians, and Standard Deviations for Whitehorse Youth**

EDI- 2 Scale	M	Md	SD	Range
Drive for Thinness	2.54	0.00	3.90	0-21
Bulimia	1.52	0.00	2.80	0-21
Body Dissatisfaction	6.08	3.00	6.81	0-28
Ineffectiveness	2.92	1.00	4.75	0-31
Perfectionism	4.41	3.00	3.84	0-18
Interpersonal D.	3.61	3.00	3.72	0-21
Interoceptive A.	2.83	1.00	4.40	0-30
Maturity Fears	4.95	4.00	3.81	0-23
Aestheticism	3.83	3.00	2.74	0-18
Impulse Regulation	3.62	2.00	4.81	0-30
Social Insecurity	4.03	3.00	4.06	0-24

* N= 450 students; 4 students were omitted here due to incomplete data on their profiles.

Further descriptive information regarding the frequencies with which students scored on each item of the EDI-2 scales is included in Appendix 5. Essentially, from these results the earlier finding of positive skew is confirmed. For most scales, 0 was the most frequent score obtained. However, there were exceptions to this tendency. For scales such as *Body Dissatisfaction,* only 25.4% of the sample had a score of 0, and only 16% had a score of 0 on the *Perfectionism* scale. On the *Interpersonal Distrust* scale, only 23.4% had a score of 0; and on the *Maturity Fears* and *Aestheticism* scales, only 7.3 and 6.4% scored 0. Interpretation of these results is that many of the disordered eating behaviors and attitudes characterized by these five scales are common to the Whitehorse youth.

EDI-2 Profile Analysis

Research Question: What is the prevalence of disordered eating behaviors and attitudes in the Whitehorse students according to gender?

Garner (1991) indicated that entire profiles or specific scales could be considered when determining eating disorder concerns with the EDI-2. He pointed out that the subscales *Bulimia, Drive for Thinness, Body Dissatisfaction,* and *Perfectionism* have been used as initial identifiers in the diagnosis of an eating disorder. However, he also recommended examination of one's entire EDI-2 profile in order to identify concerns and areas of treatment. When this multidimensional perspective is applied to analysis of an individual's EDI-2 profile, it is expected that the greater the number of elevated scales on an EDI-2 profile, the greater the likelihood of an eating disorder. In the EDI-2 manual, Garner did not specify how many subscales should be elevated before a diagnosis for an eating disorder is warranted. However, he provided examples in which individuals had been diagnosed with an eating disorder when they had only four subscale elevations on the EDI-2. In Table 3, the results presented are based on considering the number of Whitehorse students with EDI-2 subscales elevated above the 75th percentile. The high school group norms and the eating disorder norms used for this research were cited in the EDI-2 manual and are provided in Appendix 4.

Interpretation of the results of this analysis, are that there were more males than females that exhibited disordered eating behaviors and attitudes in the Whitehorse students. There were 2.4% of the males and 1.6% of the females who have subscale scores above the 75th percentile on all eight subscales. This was in contrast to the research findings that approximately 6% of females and less than 1% of males in the general population exhibit disordered eating behaviors and attitudes (Anderson, 1991; Laverty, 1995; Hsu, 1990, & Sugar, 1993). When students scoring above the 75th percentile on six or more subscales were considered, the numbers were closer to previous research findings regarding eating disorder prevalence in girls, but still exceptionally high for the boys: 6.5% of the girls and 8.6% of the boys scored above the 75th percentile.

Table 3

Frequency and Percentage of Students Scoring Above 75 %ile on 0-8 EDI-2 Subscales

	Males (N=209)		Females (N=244)	
Number of Scales Scored Above 75%ile	f	%	f	%
O Subscales	23	11.0	54	22.1
1 Subscale	55	26.3	77	31.6
2 Subscales	47	22.4	46	18.9
3 Subscales	27	12.9	23	9.4
4 Subscales	24	11.5	19	7.8
5 Subscales	14	6.7	8	3.3
6 Subscales	8	3.8	8	3.3
7 Subscales	5	2.4	4	1.6
8 Subscales	5	2.4	4	1.6

Note: The 75th percentile cutoff used for this analysis was based on the high school norms provided in the EDI-2 manual by Rosen, Silberg, and Gross (1988).

In Table 4, all eleven scales were included as opposed to the eight scales shown with the high school norm results. Garner (1991) indicated that research has not yet been sufficiently directed at the establishment of norms for youth on the EDI-2 provisional subscales, *Asceticism*, *Impulse Regulation* and *Social Insecurity*. Nonetheless, the Whitehorse students' results were included here in order to provide data regarding youth on these scales.

The Whitehorse students' profiles were compared to EDI-2 norms for persons with eating disorders on all 11 subscales. In this analysis, fewer Whitehorse students scored above the 75th percentile. This finding was expected given that the cutoff scores for eating disorder groups were much higher. Whitehorse males scored above the 75th percentile on a greater number of the subscales than did the Whitehorse females. There were 1.0% of males and 0% of females scoring above the 75th percentile on all 11 subscales. In keeping with the analysis approach used with the high school norms, when fewer scales were considered there were slight differences in numbers of students scoring above the cutoff. With eight subscales considered, 0% of males and 1% of females scored above the 75th percentile, and there are 2.0% males and 1.2% females that scored above the 75th percentile on six or more subscales. Females scored slightly more often than did males when only six or eight subscales were used as criterion. Interpretation of these findings was that for the females, their specific eating disorder concerns might best be identified with fewer EDI-2 scales.

Table 4

Frequency of Students Scoring Above the 75 %ile on 0-11 EDI-2 Subscales

	Males (N=209)		Females (N=244)	
Number of Subscales Scored Above 75%ile	f	%	f	%
0 Subscale	89	46.9	113	46.3
1 Subscale	64	30.6	83	34.0
2 Subscales	36	17.2	26	10.7
3 Subscales	10	4.8	15	6.1
4 Subscales	4	1.9	2	0.8
5 Subscales	3	1.4	2	0.8
6 Subscales	0	0.0	1	0.4
7 Subscales	1	0.5	0	0.0
8 Subscales	0	0.0	1	0.4
9 Subscales	1	0.5	0	0.0
10 Subscales	0	0.0	1	0.4
11 Subscales	2	1.0	0	0.0

Note: The 75th percentile cutoff used was based on the eating disorder norms provided in the EDI-2 manual by Garner (1991).

Frequency of Above Cutoff Scorers for Each EDI-2 Scale

In this section, results and discussion are presented regarding the disordered eating behaviors and attitudes that were found to be of greatest concern for each of the student groups of Whitehorse youth. The numbers of students scoring above the cutoff score on the EDI-2 scales were identified from each of the groups of students categorized by gender, age, grade, ethnic background, ethnic diet, and residence.

The cutoff scores utilized in this analysis, the numbers of overall students, and the numbers of boys and girls that scored above the cutoff, are documented in Table 6. In addition, the percentages of boys and girls scoring above the cutoff are visually depicted in Figure 1. The cutoff scores utilized for this analysis are representative of the lower limit of scores portrayed on the EDI-2 profile form for eating disorder norms (Garner, 1991, p.89). These scores were chosen so that the students with subclinical eating disorder concerns would be included. In addition, this study was conceived primarily as a screening study for disordered eating behaviors and attitudes, consequently any potential Type I errors were considered less problematic than they might be in a diagnostic study.

When overall eating disorder concerns for the boys and girls were noted, *Maturity Fears* was the scale with the greatest number of students above the cutoff. There were also large numbers of students who scored above the cutoff on the scales of *Interpersonal Distrust, Aestheticism*, and *Impulse Regulation*. There are two possible interpretations regarding these frequently scored scales. One is that these were problems for a large number of the Whitehorse students; the other is that the cutoff scores chosen for these scales might have been too low for adequate differentiation. Following is a discussion regarding the results of the Whitehorse boys and girls.

Gender

Research Question: *What is the prevalence of particular disordered eating behaviors and attitudes in the Whitehorse students according to gender?*

Maturity Fears, Interpersonal Distrust, Impulse Regulation, Social Insecurity, and *Perfectionism* were the most frequently scored scales above the cutoff. Boys and girls differed in the frequency with which they scored above the cutoff on the scales *Drive for Thinness, Body Dissatisfaction, Bulimia,* and *Interoceptive Awareness*. Greater numbers of girls were above the cutoff on the scales *Drive for Thinness* and *Body Dissatisfaction;* and greater numbers of boys were above the cutoff on the scales *Bulimia* and *Interoceptive Awareness*. On the *Drive for Thinness* scale, 7% of the girls and 2.8% of the boys scored above the cutoff. On the *Body Dissatisfaction* scale, 24.6% of the girls and 5.7% of the boys scored above the cutoff. These differences were significant at 68% confidence levels.

The differences found with Whitehorse boys and girls on the scales *Drive for Thinness* and *Body Dissatisfaction* are typical of other research findings in which there are more girls than boys identified with clinical and subclinical eating disorders (Garner, 1991). Garner (1991) indicated that there is a great deal of evidence that these scales are valid measures of eating disorders. He described research in which high correlations between eating disorder diagnoses and elevations on these scales were found. In addition, he reported that these scales have been highly correlated with other eating disorder tests such as the EAT and the Bulimic Investigatory Test.

The find that a greater number of boys than girls scored above the cutoff on

University of Alberta

Disordered Eating Behaviors and Attitudes of Youth in a Northern Canadian Community

by

Joanne Roberta Tessier ©

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled *Disordered eating behaviors and attitudes of youth in a Northern Canadian community* submitted by *Joanne Roberta Tessier* in partial fulfillment of the requirements for the degree of *Doctor of Philosophy* in *School Psychology*.

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Abstract

The prevalence of disordered eating behaviors and attitudes with 454 youth in a Northern Canadian community, Whitehorse, Yukon was investigated. The youth were between 11 to 19 years of age and grades 7 to 12, and were from a range of ethnic backgrounds: Canadian, European Canadian, Asian Canadian, African Canadian, and Aboriginal Canadian.

Variables examined with the Whitehorse youth were age, grade, gender, ethnic background, percentage of ethnic diet, and residence. In addition, the Whitehorse youth were compared to youth from the larger, more centralized locations of southern Ontario and northeastern United States on the measures of the Eating Disorder Inventory-Second Revision (EDI-2).

It was found that between 2.4 to 8.6 % of the boys and 1.6 to 6.5 % of the girls showed a propensity for eating disorders. Boys reported a wide range of issues including bulimia, interpersonal distrust, impulse regulation, maturity fears, and social insecurity. Girls reported specific disordered eating behaviors and attitudes, such as the drive for thinness and body dissatisfaction. Maturity fears were a concern for Whitehorse youth, however they were greatest for the younger students. Body dissatisfaction was primarily a concern for the older students. A significant proportion of the Asian Canadian youth, the youth with greater percentage of ethnic food in their diet, and who reside away from family and community acknowledged disordered eating behaviors and attitudes.

It was found that Whitehorse youth had fewer disordered eating behaviors and attitudes than did the youth from southern Ontario (n=610) and northeastern United States (n=1373).

Conclusions drawn from this research were that youth in smaller, less centralized communities are less likely to have eating disorder concerns. It was premised that boys' disordered eating behaviors and attitudes may overlap with other psychological and behavioral problems. Furthermore, it was suggested that the EDI-2 subscales of *Drive for Thinness* and *Body Dissatisfaction* might be used for the identification of eating disorders in girls because of their more specific concerns. School-based prevention programs and a multidisciplinary approach were recommended.

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Chapter I: Introduction

This study was conducted in order to investigate the prevalence of disordered eating behaviors and attitudes in 454 youth between the ages of 11 to 19 in a Northern Canadian community, Whitehorse, Yukon. In addition, students were categorized according to age, grade, gender, ethnic background, ethnic diet, and residence in order to examine potential factors involved in disordered eating behaviors and attitudes. Finally the students in Whitehorse were compared to the students in Ontario and northeastern United States on the EDI-2 measures of disordered eating behaviors and attitudes.

This study was considered important in order to identify the degree of and factors involved with occurrences of disordered eating behaviors and attitudes in this seldom-researched and potentially unique community. It was proposed that there are factors in the North that are implicated in the eating behaviors and attitudes of the youth. Another reason why this study was considered important is there has been no eating disorder research of youth in Whitehorse or elsewhere in northern Canada. In this chapter, there is a brief explication of eating disorders, clarification of concepts used in this research paper, descriptions of Whitehorse and Northern living conditions, and discussion of the research questions and objectives.

Eating Disorders

Eating disorders have been described differently throughout the ages, as Brumberg (1988) illustrated in her seminal work *Fasting Girls*. At various times and in various cultures, "fatness" or "thinness" has been considered either a positive or a negative attribute. Given the variation in approaches and explanations taken with eating disorders, it is difficult to pinpoint the specific etiological factors. An acknowledged source of definition that medical and psychological practitioners often refer to for diagnostic purposes is the *Diagnostic Statistical Manual for Mental Disorders – Fourth Edition* (*DSM-IV*), published by the American Psychiatric Association (1994). A summary of the *DSM-IV* diagnostic criteria is included here in order to provide a preliminary description of eating disorders. Further explanations of eating disorders integrated from a variety of sources are discussed in the literature review.

The descriptions of two main eating disorders, anorexia nervosa (AN) and bulimia nervosa (BN) are in the *DSM-I V*. In addition, there is a research criteria category for binge-eating disorder (BED), as well as a category for eating disorder not otherwise specified (EDNOS), which is used for coding related problems when criteria for a specific eating disorder are not met. In order to diagnose an eating disorder according to the *DSM-IV* diagnostic criteria several physical, psychological, and behavioral symptoms must be present.

To diagnose AN, there must be evidence of the physical symptoms of significant weight loss and amenorrhea. In addition, there are criteria for psychological symptoms of fear of gaining weight and disturbance in perception of one's body and shape, and behavioral symptoms of refusal to maintain body weight, and either the restricting of food or binge-eating/purging. There are no physical symptoms noted for BN in the *DSM-IV*. However, psychological symptoms are described: one's tendency to self-evaluate based on body shape and weight and a sense of lack of control over eating. As well, the behavioral symptoms are specified: eating large amounts of food in a discrete period of time (bingeing) and recurrent inappropriate compensatory behavior such as self-induced vomiting, misuse of laxatives and diuretics, and excessive exercise. As with AN, individuals can be classified as purging or non-purging types. The psychological and behavioral diagnostic criteria for BED are similar to those specified for diagnosis of individuals suffering from BN. The BED behaviors are described as comparable to BN behaviors owing to binge eating. However, BN and BED are also considered incongruous because BED individuals do not engage in the inappropriate compensatory behaviors than BN individuals do (American Psychiatric Association, 1994, pp. 539-550 & 729-731).

Garner (1991) indicated that eating disorders affect a growing number of adolescents. Many researchers agreed that both AN and BN may occur in as many as 1 to 4% of female high school and college students (Herzog, Norman, Rigotti, & Pepose, 1986; Drewnowski, Yee & Krahn, 1988; Leichner & Gertler, 1988; Pyle, Halvorson, Neuman & Mitchell, 1986 & Szmukler, 1985). Anderson (1990) found that eating disorders are less common in males than in females. He estimated that eating disorders in males turn up in approximately 1 out of 6 boys. Halmi, Falk & Schwartz (1981) surveyed a nonclinical population of 355 college students and noted that 5% of the males experienced symptoms of bulimia. In addition to investigating clinical and general populations for eating disorders, researchers have targeted their efforts at identified risk populations. Some of these researchers found greater occurrences of eating disorders or subclinical eating disorders in athletes and dancers who experience above average pressure to diet or maintain a thin shape (Rosen & Hough, 1988, Warren, Stanton, & Blessing, 1990, Brooks-Gunn, Burrow & Warren, Garner, Garfinkel, Rockert & Olmstead, 1987 & Enns, Drewnoski, & Grinker, 1987).

Eating disorders can be life threatening. Researchers who investigated anorexia reported varying rates of mortality that fluctuated between 0 and 21% (Halmi, Falk & Schwartz; 1981; Theander, 1985; & Patton, 1989). Hsu (1990) stated that beyond the life threat of an eating disorder, it is a problem in which compromises are evident in one's health; social life; and intellectual life; and, in children and adolescents, one's development. Given the seriousness of eating disorders, it is important that as researchers identify numbers of persons affected, they also attempt to better understand the precursors of eating disorders.

Clarification of Concepts Discussed in this Dissertation

There are several possible ways of studying and reporting the rates of eating disorders in a population. Consequently, there is also a potential for confusion when reviewing the results of research. Researchers have employed various methods such as questionnaires, retrospective studies, clinical records, and interviews. As well, they have used comparable terms to report the rates such as the "prevalence," "incidence," and "propensity" of eating disorders.

In the *Oxford Dictionary* (1983) the definitions of "prevalence" and "incidence" provided are similar and refer to "the rate of something existing or occurring." "Propensity" is defined as "tendency or inclination." These dictionary definitions fail to capture the more specific formulations of these words when used to describe research results. For example, Shoemaker (1998) defined "prevalence" as the actual number of cases in a defined community (usually a population at risk) at a particular point in time. He described "incidence" as the number of new cases in a specified period of time in the general population. Generally, the terms "prevalence" and "incidence" are utilized in this paper to present the rate of actual diagnosed cases of eating disorders.

Less succinct methods were used to describe eating disorder concerns in the general population, primarily because actual diagnoses were often not possible. As a result, studies were adapted to either permit potential diagnoses or were worded to fit the limitations of the research. Shoemaker (1998) described studies in which questionnaire administration was supplemented with follow-up interviews pursuant to the confirmation of diagnoses. Thomas (1996) completed a Master's thesis study on Native American women in which she measured the prevalence of disordered eating behaviors and attitudes as opposed to prevalence of eating disorders. Laverty (1995) in her Master's thesis used the term "propensity" to report the tendency or inclination for an eating disorder in a sample of Edmonton junior high students. Finally, some researchers looked at specific aspects of eating disorder precursors or symptoms. For instance, Stice, Mazotti, Krebs, and Martin (1999) examined the correlates and predictors of dieting in a community sample of adolescent girls.

Essentially, the varying definitions of eating disorders and the range of the methods used are partly responsible for discrepant results. Garfinkel, Lin, Goering, Spegg, Goldbloom, Kennedy, Kaplan, and Woodside (1995) studied BN and reported that some epidemiological studies of this eating disorder have generated differing estimates of incidence and prevalence. Gleaves, Lowe, Snow, Green and Murphy-Eberenz (2000) researched clinical and nonclinical samples for BN and concluded that such confusion is due to the taxonomic categorizations made for this eating disorder. They further added that comparisons of clinical and nonclinical populations may not be valid. This concern regarding which population should be studied when determining prevalence was also voiced by Fairburn and Beglin (1990). They found that the prevalence rates obtained from eating disorder questionnaires to be about 3 times higher than those determined by interview methods.

In this research, the terms "prevalence," "incidence," and "propensity" were referred to when reporting results from various studies. For the purposes of reporting the results of this investigation, the approach adopted was the investigation of disordered eating behaviors and attitudes. Because the Eating Disorder Inventory – 2 (EDI-2) was utilized for this research project, verification of eating disorder diagnoses was not possible. However, it was proposed that there was a greater likelihood of risk for eating disorders with the greater number and severity of disordered eating behaviors and attitudes reported by the students. Thus with this approach, it was possible to investigate the potential exacerbating or protecting influences as well as make speculations with regard to risks for eating disorders in these youth.

In this dissertation, the terms "Aboriginal" and "First Nations" and "Native Canadians" were all used interchangeably. In the Yukon, people often used the term "First Nations people." In the literature reviewed, the terms "Aboriginal" and "Native Canadian" were most often used. All appeared to be politically correct and were used interchangeably throughout this dissertation.

The terms "ethnicity," "ethnic background," and "culture" were discussed in the context of this study of disordered eating behaviors and attitudes. Census Canada (1996) defined "ethnic origin" as the ethnic or cultural group to which a respondent's ancestors belong. For the most part, ethnic origin pertained to ancestral roots or background of the person and was not confused with place of birth, citizenship, or nationality. A key focus adopted in this research was one's identification with their ethnic background. However, the EDI-2 measures for each of the student groups categorized according to ethnic background were also examined. There was a large proportion of Aboriginal people living in Whitehorse; thus, there was the opportunity to examine occurrences of disordered eating behaviors and attitudes in Aboriginal youth.

The category of "Canadian" as an ethnic origin was included. Census Canada (1996) found that 19% of the total Canadian population and 15% of the total Yukon population reported "Canadian" as their only ethnic background. It was likely that many Canadians perceived their roots as entirely Canadian.

Essentially, the terms, "ethnicity" and "ethnic background" were used to describe actual ancestral roots. Furthermore, the term "culture" was adopted to describe the associated habits, customs, and practices of a particular ethnic group. It is important to note that culture was also considered a description of the customs and practices of several types of groups, such as "youth culture" and "beauty culture."

Northern Living Conditions

Many population groups have been investigated for eating disorders in various communities throughout North America and Europe. The Whitehorse youth were considered unique because they had not been studied previously and because they lived in the North. The most commonly noted differences between Whitehorse and communities in southern Canada and United States were the weather, the distances from large urban centers, and the lack of social resources (Dacks, 1981; Dickerson, 1992 & West, 1995). These differences and others were discussed to depict their potential influences on the occurrence or non-occurrence of disordered eating behaviors and attitudes in the Whitehorse youth.

This researcher noted several conditions while living in Whitehorse. Key conditions that were distinguished by residents were that it truly was "north of sixty." What this meant for many was that it was cold and dark for several months of the year. However, northern Canada was also considered different from southern locales in many ways beyond latitude and temperature. Yukoners consider their "demographics" unique. Many were proud of their "great outdoors" and had claimed that there were more bears and moose than there were people in the Yukon (Personal communications, 1996-1999 & Lost Whole Moose Catalogue, 1999).

The demographics are slightly different in the North than they are in southern Canada. Dacks (1981) stated that there are diverse Aboriginal and Non-Aboriginal groups of people in the Yukon. He cautioned that generalizations made of either group could potentially hide more than they reveal about them. Dacks described the Non-Aboriginal population as consisting of two types of people: the long-term residents who have moved their families and are committed to their new home, and the transients who moved to the Yukon for economic opportunities and have less commitment to the community. People are transient in the North primarily as a consequence of the fluctuating mineral and resource economy (Yukon Bureau of Statistics, 1994).

There are a greater proportion of Aboriginal people in the Yukon, and elsewhere in the North, than in southern Canada (Yukon Bureau of Statistics, 1999; NWT Bureau of Statistics, 2000; Nunavut Bureau of Statistics, 1999; Dickerson, 1992; Ponting, 1997; & Statistics Canada, 1996). Furthermore, Dacks (1981) indicated that there is considerable diversity within the First Nations communities because they are organized by regional and linguistic groupings. In the Yukon alone there are 16 First Nations regional groups and 8 Aboriginal languages spoken (Department of Indian and Northern Affairs, 1998). As well, many people who write about the North contend that the First Nations people in the North are more emotionally identified to their cultural backgrounds than urban First Nations people are (Dickerson, 1992; Coates, 1991; Dack, 1981 & Ross, 1992). One reason given for this fact is that they enjoy easier access to more traditional ways of life such as hunting and fishing (Yukon Bureau of Statistics, 1994).

Beyond the weather, wildlife, and "people" aspects of living in Whitehorse, and elsewhere in the North, there are the limitations in access to urban conveniences and social services. Whitehorse youth possess fewer shopping opportunities than do southern Canadian youth. Students in rural communities of the Yukon must relocate to larger centers for schooling (Yukon Bureau of Statistics, 1994). Northern residents must travel to southern Canada for serious medical treatment (Yukon Bureau of Statistics, 1994). In particular to eating disorders and the Yukon, concerned parents, teens, and teachers have indicated that they have few treatment options (Personal communications 1996-1999).

It is very likely that citizens of small communities throughout Canada share many of these concerns about isolation. However, in the Yukon, distance was another factor: people need to travel great distances in order to access larger centers that provide social, economic, and cultural resources. This is considered not entirely detrimental, owing to the fact that many Northerners chose such a setting and develop activities to foster a unique northern culture and identity.

In Whitehorse, there are several activities and celebrations throughout the year. There is the Storytelling Festival in June, in which various Aboriginal and Non-Aboriginal themes are featured. In February, there are sled dog races between Alaska and the Yukon; a three-day music festival called *Frostbite*, and the *Rendezvous* celebration of the Klondike. Recently, the Whitehorse citizens hosted circumpolar sports events and conferences. These circumpolar events were considered essential to the development of connections between various northern people. Participants came from areas such as Alaska, Greenland, Russia, Nunavut, Northwest Territories, and Norway. In the First Nations community, several potlatches are celebrated throughout the year. Potlatches typically involve sharing of food by people who gather to celebrate or mourn.

Given these cultural and social depictions of Northern living, one might infer that living in a northern community such as Whitehorse might actually be a beneficial factor in the protection against eating disorders. There are activities for youth from which they may potentially reap the benefits of a northern cultural identity and kinship. In addition, youth in the Yukon have less access to venues that are potentially involved in the sociocultural pressures of "body image" as felt by southern Canadian youth. Nonetheless, there is also a contrary inference to consider: Whitehorse youth have less access to prevention and treatment resources. Social, health, and psychological problems have been identified in the Aboriginal and Non-Aboriginal people of the North.

In the *Accounting of Health* survey completed by the Yukon Bureau of Statistics (1994), there were substance abuse issues noted. According to the results, there are 3 times more marijuana or hashish users in the Yukon than in the rest of Canada. While the numbers of drinkers in the Yukon and the rest of Canada were similar, there were greater numbers of female drinkers in the Yukon than in the rest of Canada.

Ponting (1997) described concerns for Aboriginal people throughout Canada. His research is worth noting because there is a large proportion of Aboriginal people in Whitehorse and elsewhere in the North. Statistics Canada (1996) reported that 20.1% of the Yukon population is First Nations, as opposed to only a 2.8% population of First Nations people in southern Canada. The Northwest Territories Bureau of Statistics (2000) reported that 29% of the population was First Nations. The Nunavut Bureau of Statistics (2000) reported that there was a much higher proportion of First Nations people: 60%.

Ponting (1997) referred to government data to report on specific concerns he noted. He found that Registered Indian Males between the ages of 15 and 24 had a suicide rate that was 4 times the rate of their same-age counterparts in the larger Canadian population. Other problems more closely related to eating behaviors and attitudes have been investigated in First Nations people. In the Aboriginal People's Survey (1991) it was reported that 8.6% of the on-reserve and 5.5% of the off-reserve Aboriginals in Canada had diabetes. Ponting suggested that this was a notable concern related to disturbed eating behaviors and attitudes because obesity is recognized as a potential precursor to diabetes – type II and to eating disorders. Young (1991) and the researchers involved in the administration and analysis of the1991 Canadian Fitness Survey corroborated this concern. They found a large proportion of obesity in all age-sex groups in six Northwestern Ontario and Northeastern Manitoba Cree and Obijiway communities.

At present, there appears to be no published research regarding eating disorder prevalence in Aboriginal youth of the North. However, the research noted above and other research was indicative of a range of concerns regarding the psychological and physical wellbeing of First Nations youth (Ponting, 1997; Dacks, 1981; Ross, 1992; O'Dickerson, 1992 & Kleinfield, 1994).

In essence, there are positives and negatives incurred when living in any community. In this discussion, it was submitted that there are opportunities to participate in cultural activities in Whitehorse, just as there are restrictions, such as fewer resources and greater distances one must to travel for services. Also noted were some of the health, social, and psychological concerns of people in Whitehorse. It was contended that some aspects of these living conditions are protective factors against the onset of an eating disorder. It was also suggested that some of these living conditions are risk factors, this viewpoint was taken because of the limitations for treatment of existing eating disorders in Whitehorse.

Research Questions

The primary question addressed by this research was "What is the prevalence of disordered eating behaviors and attitudes in the youth of Whitehorse?" There were several more related questions with respect to the investigation of the following factors: age, grade, gender, ethnic background, ethnic diet, residence, and the comparisons of Whitehorse youth with other youth groups in Southern Ontario and northeastern United States. These questions were grouped into three categories: (a) questions pertaining to population characteristics, such as what the prevalence is for the overall population; (b) questions pertaining to the students categorized according to gender, age, grade, ethnic background, ethnic diet, and residence; and (c) questions regarding the reliability of the data and generalizations that can be posited, such as questions regarding the similarities or differences of students in the schools and within the various grades and age groups. Each of these related questions is included below. In addition, discussion regarding the rationale for each question is presented.

(1) What is the prevalence of disordered eating behaviors and attitudes in the Whitehorse students according to gender?
(2) What is the prevalence of disordered eating behaviors and attitudes in each of the Whitehorse age and grade groups of students?
(3) What is the prevalence of disordered eating behaviors and attitudes in students in each of the Whitehorse schools?
(4) How do the disordered eating behaviors and attitudes in the Whitehorse youth compare to youth groups, who live in larger and centralized southern Canadian and northeastern United States?
(5) What is the prevalence of disordered eating behaviors and attitudes in each of the Whitehorse ethnic background student groups?
(6) What is the prevalence of disordered eating behaviors and attitudes in the Whitehorse First Nations youth?
(7) What is the prevalence of disordered eating behaviors and attitudes in groups of students categorized according to the percentage of ethnic food in their diets?
(8) What is the prevalence of disordered eating behaviors and attitudes in students who must leave their families and communities to attend high school?

Discussion of Research Questions

Researchers who have studied the onset and maintenance of eating disorders have indicated that gender and age are commonly identified factors (Garner, 1991; Hsu, 1990; Shore & Porter, & Vandereyecken, 1998). Many researchers agreed that females are at greater risk for eating disorders, and that older teens and young adults are at greater risk than younger teens and children, and older men and women (Flament, Ledoux, Jeammet, Choquet & Simon, 1995; Russell, 1986 & Stewart, 1998).

Less-researched factors of ethnic background, ethnic diet, and residence were also considered. These factors were included for two reasons: first, these factors have not been investigated as extensively and the results might be applied to better understand the precursors of eating disorders; second, because it was possible that the experience of living in Whitehorse may make them relevant. The factors of grade and school were included to ensure that the results were applicable to the age groups found in each grade and to ensure that the results were homogeneous among the schools. It was felt that if no differences were brought to light with the analysis of the school and grade factors, then conclusions regarding the 454 youth might be considered representative of the overall youth population in Whitehorse and potentially of other Northern Canadian youth. Essentially, the primary goal regarding the assessment of the factors of age, gender, ethnic background, ethnic diet, and residence was to ascertain whether or not these factors are involved in disordered eating behaviors and attitudes found in the Whitehorse youth and, if they are, to provide appropriate recommendations.

The research question regarding urban versus rural youth prevalence for eating disorders, attitudes, and behaviors was based on defining Whitehorse as rural or semi-urban. Statistics Canada (1999) indicated that Whitehorse was a city of approximately 19,000 people. In Whitehorse, citizens enjoy some of the resources found in a large city because it is the capital of the Yukon. However, there was also an acknowledgement that there are fewer services and resources in Whitehorse. Essentially, Whitehorse was described as semi-urban or rural because of the small population and because of the limited access to shopping and other resources. To assess the possible influence of living in a small community versus a large one, the Whitehorse students were compared to youth in the larger centers of southern Canada and northeastern United States (Shore & Porter, 1990 & Rosen, Silberg & Gross, 1986).

There were two reasons for investigating differences between youth in different population settings in this study. First, to expand on research regarding eating disorders and other related psychological concerns, which has to date been inconclusive with respect to urban and rural or semi-urban youth. And second, to determine the accuracy of the contention that Whitehorse youth, like other rural or semi-urban youth, are less likely to experience eating disorder concerns.

There was some research directed at youth and adults with regard to eating disorders and level of urbanization. Hoek (1991) reviewed the literature on rural and urban eating disorder occurrences and found comparable numbers of cases of anorexia in both urban and rural settings and greater numbers of bulimia cases in urban settings. He concluded that the prevalence of eating disorders is generally lower in smaller communities. Other researchers have found that people from rural areas and small cities are protected from the sociocultural influences on appearance. For example, De Azevedo and Ferreira (1992) completed research comparing rural and urban youth in less industrialized countries than Canada. They found that the youth there are isolated from sociocultural pressures on appearance. They suggested that these youth are less influenced than youth of more Western industrialized countries. Although De Azevedo and Ferreira were looking at additional factors of less industrialized societies and economic structures, their findings were of particular interest in this study of adolescents in Whitehorse, who are geographically insulated from some sociocultural influences of mainstream Western society.

With this urban versus rural or semi-urban question, there were other factors aside from population and resources to consider. The isolation and distances experienced in northern communities the size of Whitehorse and smaller may be implicated in occurrences or non-occurrences of eating disorder behaviors and attitudes. This possibility was discussed earlier, where aspects of living in the North were presented. Fundamentally, it was premised that the Whitehorse youths' isolation from the media exposure and shopping opportunities available to urban youth is a protective factor against excessive preoccupation with body image. On the negative side, given the isolation and distances from larger southern centers, Whitehorse youth have fewer opportunities to test and develop confidence in their ability to cope with the demands of a complex and highly technological society.

In addition to the northern culture and identity that one may experience in Whitehorse and other areas of the North one must consider the culture of one's ethnic background. For some Canadians, ethnic background is of little concern, particularly with respect to eating behaviors and attitudes. However, for many other Canadians, their ethnic background is a primary aspect of their lives and is involved in many of their behaviors and attitudes. In this study, the role of the students' ethnic background, ethnic diet, and residence in eating behaviors and attitudes was investigated.

At present, few eating disorder researchers have studied ethnic background factors with adolescent populations. There are various beliefs regarding the relationship between eating disorders in adolescents and ethnic background. One proposal put forth by Pumariega (1986) was that it is the degree of acculturation into North American society that is involved in the occurrence of eating disorders in minority youth and adult populations. Essentially, he suggested that the likelihood of disordered eating behaviors and attitudes increases with one's level of acculturation. Researchers of eating disorders who have utilized eating disorder questionnaires have found that there is a lower prevalence of eating disorders and related "body weight" concerns in certain ethnic groups. They also indicated that there are increases in these concerns as the exposure to "Western values" increases (Babbitt, Edlen-Nezin, Manikam, Summers & Murphy, 1995).

Ethnicity was not the entire focus of this ethnic background question, although the First Nations youth were of interest because of their large population in Whitehorse. Instead, like Pumariega (1986), the cultural aspect of ethnic background was considered. In particular, it was proposed that greater identification with one's ethnic background and related culture is a protective factor against disordered eating behaviors and attitudes.

There have been examples of the facilitation of youth's developmental transitions by one's culture cited in anthropological studies. Brooks-Gunn and Reiter (1992) described various anthropological studies of puberty rites, which were used to assist youth with developmental transitions so that they could experience pride as they enter into adulthood. In many cases, puberty rites were common practices for early Aboriginal people. Carlick (1995) described the puberty rites of the Inland Tlingit people. One example presented that was related to eating behaviors was that girls were isolated and observed food taboos in order to pass symbolically from childhood to womanhood. In summary, in analyzing the ethnic variable, a primary question posed was whether or not one's identification with his or her cultural and ethnic background is a protective factor or a risk factor in disordered eating behaviors and attitudes. Eating disorder research regarding percentage of ethnic food in the diet and residence was not found. In all likelihood, this was because there was no existing data on these topics. Since these were novel considerations, an explanation and rationale for considering them is included below.

Specific to this research was the proposal that a greater percentage of ethnic food in the diet might be indicative of co-occurring protective factors against disordered eating behaviors and attitudes. More specifically, in this research there was the suggestion that a youth who reports a greater percentage of ethnic food in the diet may also enjoy the benefits of greater family and ethnic/cultural involvement. Also suggested was the premise that a greater amount of ethnic food in the diet is characteristic of healthier nutritional opportunities. The reasoning here was based on intuitive supposition that although persons within each ethnic group eat somewhat different foods, most of them incorporate foods that are recognized as essential to meeting a body's nutritional requirements. Thus, the proposition was that students who reported a greater percentage of ethnic food in their diets were protected from eating disorder problems socially and emotionally by greater familial and interpersonal support and physically by healthier eating practices.

The question regarding "residence" was posed because several rural Yukon students had to leave their home and community to attend school in Whitehorse. It was contended that for the most part, family and community are important protective factors against eating disorders. Consequently, students who must move away from their family and community for school might very likely experience psychological isolation. In addition, they might have fewer healthy eating opportunities found in the shared meals and nutritional foods characteristic of family dining. Essentially, the position considered was that moving away from one's family and community might present as a risk factor for youth. The reasoning applied was that the youth are isolated from their support system and lack the social and nutritional benefits of meals with the family. Furthermore, students who are strongly identified with their ethnic background are separated from their traditions and customs.

One can refer to some research findings to identify the consequences of separation from one's community. For example, Wein and Wein (1995) reported that the incidence of diabetes mellitus is greater for Aboriginal people that live in the southern urban areas as opposed those who live in the small community settings of the North. Drawing from this finding, it was suspected that for some Aboriginal people access to one's community and corresponding traditional eating practices are protective factors against eating disorders. This factor might also be applicable with the other ethnic groups that were investigated.

Essentially, both of the questions regarding ethnic food in diet and residence were formulated based on the belief that the psychological and physical benefits of identification with and belonging to a family and community are essential to healthy eating behaviors and attitudes. The Whitehorse youth provided the unique opportunity for exploring these research questions. These young people came from a range of ethnic backgrounds, and many left their homes and communities to attend school.

Outline of the Dissertation

In Chapter Two, past and current understanding of eating and eating disorders are discussed. Definitions of normal eating behavior and eating disorders are included. There is a range of definitions, explanations, and approaches for eating disorders, such as the biomedical, social, cultural, and psychological approaches. In addition, each of the variables investigated in this study is discussed: age, grade, gender, ethnic background, ethnic diet, and residence. Finally, research regarding eating disorder prevention and intervention is presented.

In Chapter Three the procedures of investigation and analysis are described. These include the selection of a research approach and questionnaire, and the procedures employed to gather and analyze data. As well, preliminary limitations and delimitations are considered. In Chapter Four, the data results are presented and discussed. In Chapter Five, there is discussion of the implications of the findings. In particular, prevention, intervention, and treatment possibilities applicable to Whitehorse youth are considered. Finally, the limitations and delimitations of the study are reviewed and recommendations for further research efforts are provided.

Chapter 2: Literature Review

Descriptions and Definitions of the Eating Disorders

A great deal of effort has been focused on looking for and identifying causes of eating disorders. Generally, it is agreed that there are psychological, behavioral, and physiological markers involved in eating disorders. AN and BN are the two most common and life-threatening eating disorders. According to James (1989), AN and BN have been described as both syndromes and symptoms. As syndromes, eating disorders are characterized by dysfunctional eating and weight-reducing behaviors. As symptoms, the eating disorders are diagnosed as secondary to other psychiatric concerns such as schizophrenia and depression. Although not diagnosable conditions according to the *DSM-IV* (1994), serious eating problems such as overeating, obesity, and irregular dieting have been linked to AN and BN as predisposing factors (Lawrence & Dana, 1990; Polivy & Hermann, 1985; Striegel-Moore, 1993; Stice & Agras 1997; Stice, Maztotti, Krebs & Martin, 1998). These subclinical eating problems are important to consider when identifying at-risk behaviors and attitudes associated with eating disorders. As with the effects of eating disorders, one's functioning and overall fulfillment and enjoyment of life is compromised when one has a subclinical eating problem. Descriptions and explanations of the eating disorders and subclinical concerns regarding eating problems are in the following sections.

Anorexia Nervosa

The Latin translation for "anorexia nervosa" is a "nervous lack of appetite." This definition is misleading because the sufferer of AN is often hungry and struggles to control his or her appetite and obsession with food (Garner & Garfinkel, 1985; Levenkron, 1982; Long, 1987; Sacker & Zimmer, 1987).

AN is characterized by many defining attributes such as hormone disturbances, the physical consequences of fasting, use of laxatives, hypothalamus abnormalities, and co-existing affective disorders (American Psychiatric Association, 1994; Bruch, 1973; Sours, 1980 & Carlson, 1986). Persons with AN show a morbid fear of body fat. Crisp (1997, 1998) described this fear slightly differently for adolescents, "The adolescent with AN shows a fear of adolescent weight and its maturational consequences, not a fear of fat (p.49)."

In contrast to a diverse age range found with other eating disorders, anorexia occurs primarily in teens and young women. The reason younger age groups are more vulnerable to AN has been attributed to several factors. From a medical-biological perspective, the appearance of AN at a young age may be due to changes in a young woman's endocrine (hormones) status, which in turn is involved in metabolism alterations. For example, Carlson (1986) reported that food intake and body weights of lab animals are affected by the hormones progesterone and estradiol. He suggested that this hormone factor is similarly involved in the human female's food intake and body weight (p. 475). Another often cited factor is that the behaviors of young women such as prolonged fasting and use of laxatives have adversely affected their metabolisms (Halmi, 1978 & Sours, 1980). From a psychodynamic viewpoint, Bruch (1979) described AN as one's inability to face the task of maturation because of delayed ego development, family dysfunction, and personality characteristics.

Hsu (1990) listed the physical signs of AN as "striking emaciation, dry skin, yellowish discoloration, lanugo over the trunk, face and extremities, cyanotic peripheries, dependent edema, and stunted growth especially in early onset anorexia nervosa" (p.40).

Bulimia Nervosa

Bulimia is a relatively new diagnostic category in eating disorders. Russell (1992), who had conducted extensive research and treatment with the eating disorders, first coined this term and specified the diagnostic criteria in the 1970s.

The Latin translation for bulimia nervosa is "nervous eating like a bull." Key problems of this eating disorder are noted beyond this definition. These include feelings of disparagement and depression after a binge, a morbid fear of becoming obese, and lack of control over food consumption. There also appears to be a cluster of behaviors, attitudes, and personality characteristics associated with bulimia. Essentially, individuals with bulimia engage in overeating and bingeing behaviors, purging behaviors, and present with a belief that this is the only way to control weight. The personality characteristics of individuals with BN are varied. However, the most common presentations noted are impulsivity, low self-esteem, borderline personality disorder, and poor coping strategies (Garner, 1991; Russell, 1992 & Crisp, 1997).

Key behavioral characteristics of BN are bingeing and purging through a variety of methods, including regurgitation, excessive exercise, fasting, and strict dieting. Reasons given for the binge-purge behavior have been described as bingeing or overeating to deal with stress, and purging to reduce anxiety regarding fear of gaining weight from overeating(Personal communications from clients, 1995-1999). Garner (1991) suggested that individuals with BN experience "fear of fat" and "drive for thinness" to the same degree that persons with AN do.

The difference between these two eating disorders can be identified in the behavioral approach each individual uses when dealing with food. A person with BN usually ensures weight control by purging, while the person with AN usually controls weight with severe food restriction. Stice and Agras (1999) completed a study with 265 women who were diagnosed with bulimia and discovered that there are two subtypes: the ones presenting with dietary problems and those with a mix of dietary problems and depressive presentation. The latter groups of women reported more eating and weight obsessions, social maladjustment, and higher rates of mood, anxiety, impulse control, and personality disorders. Stice and Agras suggested that dieting is a central feature of bulimia and that the depressive affect is evident in a subset of cases.

Practitioners who work with persons who have eating disorders and researchers of the incidence and prevalence of eating disorders have indicated that diagnosis is difficult because of the secrecy and embarrassment the sufferers experience (Hsu, 1990 & Vandereycken & Noordenbos, 1998). In a former study of eating disorders, one participant who had formerly struggled with BN stated, "Bulimia was a more acceptable addiction than other addictions. It's clean" (Tessier, 1993). Apparently, as with addictions, one's disclosure of the eating disorder was an important first step in recovery, and this person had achieved that first step.

Individuals with bulimia are more difficult to identify by body size and weight than individuals with anorexia. Some persons with bulimia have characteristics of anorexia, in that they are skeletal-looking, while others can fall within a range of body types, from normal size to and significantly overweight. Hsu (1990) described some of the physical signs of BN sufferer: "They may appear flushed, have swollen salivary glands, dental erosion and callouses on the hands" (p.40).

Binge-Eating Disorder

Lawrence and Dana (1990) suggested that compulsive eating behavior might represent a third serious eating disorder. It is recognized as a potential diagnosable disorder in the *DSM-IV* (1994) and called binge-eating disorder (BED). This diagnostic category is described as one requiring further research. The person with binge-eating disorder is usually overweight; however, there are some individuals that control their weight by purging or by the use of laxatives. They may be within a normal weight range for their body types. Like a person suffering from BN, a person that has BED eats more than he/she needs or wants because of confusion regarding physical and emotional cues. Also, like a person suffering from BN, the binge-eater suffers from attributing body size and food consumption with social identity and self-concept. Wilfley, Friedman, Dounchis, Stein, Welch & Bail (2000) investigated the rate and treatment implications of co-morbid psychopathology in BED occurrences. They indicated that depression and other Axis I and Axis II disorders in the *DSM-IV* are significantly related to the severity of BED. They also indicated that persons with BED are more likely to have the Cluster B personality disorder problems such as borderline personality disorder and narcissistic personality disorder. Thus, these persons may appear to be somewhat dramatic, emotional, and erratic.

Other Eating Problems

Other eating problems that were noted in the literature were not as clearly identified as an eating disorder. However, they were noted for the effects on emotional, physical, and social health and could be considered precursors to diagnosable eating disorders. These eating problems were described in the literature as activity anorexia, developmental and reactive obesity, excessive overeating, excessive dieting and exercising, and "thin-fat" people. (Epling & Pierce, 1991; Kron, Katz, Gorzynski & Wuner, 1978; Wheeler, 1990; Orford, 1985; Bruch, 1957, 1973). I reviewed these eating problems in the literature review because there are more occurrences of subclinical eating disorders, disturbed body image and dieting, and disordered eating behaviors and attitudes than there are actual occurrences of eating disorders within the general population.

Activity Anorexia

Activity anorexia has been described as a subcategory of AN (Epling & Pierce, 1991; Kron, Katz, Gorzynski & Wuner, 1978 & Wheeler, 1990). This eating problem is the result of the interaction and reinforcement of two behaviors: overactivity and food avoidance. Epling & Pierce (1991) and Kron, Katz, Gorzynskie and Wuner (1978) described the physical and psychological processes of activity anorexia in the following way. An individual with activity anorexia experiences a change in his or her personality and refuses food or eats small amounts. The decision of whether or what to eat is determined according to the amount of exercise he or she does, usually it must be at least 2 to 3 hours a day in duration. Paradoxically, the person with activity anorexia eats less as he or she gets more exercise although his or her body requires more food. Epling and Pierce (1991) attributed this paradox to the effects of neurotransmitters: When endorphins are released as a result of excessive exercise, a feeling of fullness and contentment is induced, thus the individual experiences a reduced desire and motivation to eat.

Wheeler (1990), who studied both male and female athletes, described a similar phenomenon. He depicted eating disorder behaviors on a behavioral loop. People are reinforced by the positive feedback they receive for a slim appearance; consequently, a dysfunctional interaction of compulsive exercise and poor eating habits is perpetuated. Wheeler suggested that this behavioral loop is common among athletes and professional dancers. Activity anorexia is an important eating problem to note and recognize as a potential precursor or cousin to AN, especially in physically active populations.

Obesity

Discussion of obesity is included here as a risk factor for a subclinical eating disorder because some researchers have identified a link between the dieting of obese individuals and occurrence of eating disorders (Marcus, Wing, & Lamparski, 1985; Hudson et al, 1988; & Marcus & Wing, 1987). Furthermore, researchers have noted that occurrences of eating disorders in males are usually preceded by premorbid obesity (Lawrence, 1990 & Hsu, 1991). As well, obesity had been identified in the First Nations community in Canada (Ponting, 1997). Finally, obesity is considered a widespread concern (Critser, 2000; Stacey, 2000; Young, 1999; & *Journal of Medical Association*, 2000). Garner (1991) included the EDI-2 scales *Bulimia* and *Impulse Regulation* in order to assess eating disorder symptoms such as binge eating. He indicated that some obese individuals who binge might warrant a diagnosis of bulimia.

Hilde Bruch (1957) reported that there are obese people with and without psychological concerns. She described three categories of obese people with psychological concerns. She said there are *reactive obese* people, who engage in overeating in response to stress and who tend to use food as a source of comfort. There are *developmental obese* children and adolescents, who are overly concerned with their size, yet fear the possibility of becoming small and weak. Finally, there are *thin-fat* people, who have lost weight but continue to view themselves as overweight (p.228*)*. Her descriptions were relevant to this research project because these problems were characteristic of some of the concerns listed on the EDI-2 scales, such as bulimia, binge eating, impulse regulation, body dissatisfaction, and drive for thinness.

Excessive Eating, Dieting, and/or Exercising

One final group of eating problems to consider was that of excessive eating, dieting, and/or exercising. The key aspect here was that one's behavior was excessive to the point of being called an addiction; and, consequently, treatment was recommended based on the principles of Alcoholic Anonymous (Orford, 1985). People with these "excessive" problems may also have had some of the behavioral symptoms characteristic of the eating disorders, AN, and BN, as well as some of the other eating problems. Excessive eating, dieting, and exercising might be characterized as a potential precursor to an eating disorder or as a subclinical eating disorder, given that a person has some of the symptoms but not all.

Physiological and Psychological Aspects of Eating and Eating Disorders

Tessier (1993) examined eating disorders and a range of eating problems with theoretical and qualitative analyses and suggested that eating problems should be viewed as occurring on a continuum with the eating disorders. This approach was also supported by some researchers who claimed that strict adherence to clinical diagnostic standards could result in delayed treatment and limited understanding of the precursors to eating disorders. Garner, Olmstead and Garfinkel (1984) and Nylander (1971) placed a clinical or severe eating disorder, which they described as life threatening, at the extreme end of the continuum. Hsu (1990) recognized a continuum in which dieting is at one end of the continuum and AN is at the other. Gleaves, Lowe, Snow, Green & Murphy-Eberenz (2000) indicated that many researchers who have evaluated continuity and discontinuity eating disorder models had produced inconclusive results.

It appears that many researchers are still in disagreement regarding diagnostic and categorical approaches that should be taken with eating disorders. Nevertheless, a continuum approach was considered appropriate when one's objective is to include a range of behaviors, body shapes, and the degree of threat to life in part of a diagnosis. For this present research, the continuum perspective was helpful to keep in mind for studying the prevalence of disordered eating behaviors and attitudes in the general population. As well, because both males and females were studied, male cases could potentially be excluded if diagnostic standards are based on symptoms that characterize eating disorders in females. For example, the *DSM-IV* (1994) diagnostic criterion of amenorrhea for AN does not apply to males.

Furthermore, it was proposed that in any research study or clinical treatment in which one considers subclinical presentation and/or precursors to an illness as well as the illness itself it is also important to understand the converse: normal and healthy functioning. Essentially, a continuum perspective is inclusive, and healthy behaviors can be compared to problematic behaviors. Following is a summary of normal and healthy eating processes in which socially learned behaviors and physiological components of eating are discussed. Various biomedical, sociocultural, and psychological explanations and approaches to eating disorders are then reviewed.

Eating as a Natural Body Process: Explaining Physiological Components

In any discussion of eating disorders given to the general population, it is essential to describe what the baseline "normal" behavior is. This is probably most true for youth, because they are potentially more susceptible to external influences. Schoemaker (1998) cautioned people who conduct screening or provide prevention programs for eating disorders to be aware that they may unwittingly suggest the wrong ideas to healthy people. He cited cases in which people started exhibiting disordered eating behaviors such as vomiting and use of laxatives following their doctor's questions regarding eating disturbances (p.201).

At the outset of the eating disorder presentations given to the Whitehorse students who participated in this research project, this researcher provided them with Tim Hortons Timbits. As they ate the Timbits, there was a discussion of the normal aspects of eating. In particular, we focused on the taste and texture of food, the physical and emotional feelings induced, and memories evoked while eating. The Whitehorse students responded positively to this discussion. They volunteered examples of how feelings and memories were induced by certain foods and smells of food. They also provided examples of when they ate food in response to strong emotions such as sadness, excitement, anger, and boredom. The approach used with the eating disorder presentations was characteristic of the approach taken in the following literature review: to discuss first the healthy aspects of eating, and then to provide information regarding the physical, psychological and social aspects of eating disorders.

Hunger and Satiety

When and how much a person eats is determined by a complex interaction of innate and learned responses. Physical hunger is considered the initial and primary instigator involved in the start of a meal. It is produced by metabolic signals, which are triggered when stored nutrients are depleted. The detectors for these signals are located in the liver and brain. Social factors are equally involved in hunger. For example, one might experience hunger in reaction to a number of situations, such as the presence of appetizing food, the company of people who are eating, or even the words, "It's time to eat." Furthermore, people often eat in the absence of a need for food, such as when they are feeling emotional or bored. Geneen Roth (1982) has written extensively on the tendency for people to confuse emotional needs with hunger. Her therapeutic approach is to encourage people to recognize and differentiate between physical and emotional hunger.

A person should stop eating when the need for food is satisfied. This involves both biological satiation processes and socially learned cues. Biological processes are initiated by a number of metabolic signals. For example, portion sizes are affected by the feedback one receives from the digestive system and from neural and hormone changes (Shils & Young, 1988). As with the instigation of hunger, the ability to stop eating is also attributed to learned responses. Thus, when food is familiar, a person eats what he or she has learned to be a proper amount.

The explanation of the natural physiological mechanisms of hunger and satiation is a starting point by which to consider eating disorders. Eating problems and eating disorders are a deviation from a natural process of ingesting, digesting, and establishing metabolic rates. Whether one is researching the topic of eating disorders or treating individual clients with eating disorders, an understanding of the innate wisdom of the body is essential.

Biomedical Factors of Eating Problems and Eating Disorders

A brief overview of research regarding the biomedical factors of eating disorders was included in this literature review for a few reasons. First, it was considered important to be aware of the body processes that are involved in eating, eating problems, and eating disorders. Second, because there is a range of treatment methods and theories regarding eating disorders and integration of these into multidimensional approaches are recommended to treat all aspects of an individual. Third, when the classes on eating disorders were presented, the Whitehorse youth who participated in this study were provided this information at an age-appropriate level. The information was used as a basis for discussing how one can reduce the risk for eating disorders with proper diet, nutrition, and exercise.

Hormones

Hormones trigger cessation of eating and slow or speed up chemical reactions in response to food (Gonzalez and Deutsch, 1981). Hormones have been identified as key players in regulating weight; and when there is an imbalance or malfunctioning of hormones, they have been attributed to obesity, compulsive eating, bulimia, and anorexia (Carlson, 1986).

The key point in considering hormones when discussing eating disorders was the awareness that there is a delicate balance of regulatory mechanisms that can be upset. For example, eating disorders have been known to occur secondary to diabetes mellitus, which is related to abnormalities in the insulin-glucagen system (Steiner, Sanders, Ryst, 1995). Essentially, hormones are affected by one's nutrition, level of stress, menstrual cycles, growth spurts, and affective state. In short, there is a cyclic chain of interaction: hormones affect behavior and in turn are affected by behavior.

Understanding the role of hormones in developmental changes was helpful when explaining and treating eating disorders with youth. At puberty, there are changes in endocrine status; as a result, the youth's metabolism and related neural mechanisms involved in hunger and satiety are altered. Wade and Gray (1979) studied laboratory animals and found that food intake and body weights are modified by the hormones progesterone and estradiol. If one were to extrapolate from these findings, one could surmise that the adolescent boy or girl might be physiologically motivated towards abnormal eating or dieting because the hormones progesterone and estradiol are drastically affected during this period of growth.

Hypothalamus

Discussion of the hypothalamus was included to emphasize the need for medical assessment, particularly in cases in which lesions are implicated in disordered eating. In addition, it was contended that awareness of the interaction between the brain and other hormonal and bodily processes allows one to recognize the interplay of biological and psychological factors of eating disorders.

Those who have investigated the role of the hypothalamus have reported that lesions in the hypothalamus are linked to occurrences of dysfunctional eating or digesting (Carlson, 1986). Essentially, the normal relay of messages associated with healthy ingestive behaviors can be obstructed by lesions. Consequently, the body is unable to utilize food as a fuel, and there can be either overeating and obesity, or lack of eating (Gold, 1973 & Jones, Sawchenko, Hetherington & Ranson, 1939 & Kapatos, 1977).

The work of researchers in the area of psychophysiology and neurology who have noted the role of biology in eating disorders is even more relevant to this research, which was conceived primarily as an investigation into the psychological and social aspects of disordered eating behaviors and attitudes. As a result of these studies, preexisting conditions and the residual effects of an eating disorder on the brain were explained. Seeger and Lehmkuhl's (1993) study was relevant to this present research because the reciprocal roles of one's body image and one's emotional state were demonstrated.

Seeger and Lehmkuhl (1993) examined 10 adolescents with AN and 10 age and cognitively matched normal controls for reactions to the presentation of emotional stimuli by providing a random sequence of visual depictions of thick and thin models. They found that adolescents with AN showed shorter reaction times and prolonged latencies of P300 at left frontocentral sites when presented with the emotionally high-loaded stimuli (pictures of a thick female silhouette). They suggested that low-weight AN patients may have had a body-image-related deficit in neuronal processing at the frontocortical area of the brain when there is a stimulus with a high affective load. This finding was interesting in light of the characteristic "fear of fat" and resistance to feeding that persons with anorexia exhibit once they start to gain a little weight.

In a similar line of reasoning regarding the impact of an eating disorder on thought and emotions, Casper and Heller (1991) concluded that the adolescent's increased capacity to acknowledge negative affect during weight gain may be due to enhanced activation of the right hemisphere. They also offered this as an explanation for the reluctance of a restricted eater to return to normal eating behavior and former weight. Their ideas were engaging, especially in light of the fact that depression has often been associated with eating disorders and effectively treated with antidepressant medication (Garner, 1991). Rothenberger, Dumais-Huber, Moll, and Woerner (1995) speculated that adolescents with anorexia might suffer from some transitory frontal lobe deficitthat can have an impact on their ability to adequately evaluate their body size and health. They concluded that because neuronal deficits are closely related to body weight and eating behaviors, a primary therapeutic objective must be to increase body weight if somatic and mental functions are ever to be restored (p.215).

Serotonin

Serotonin is an inhibitory neurotransmitter substance that has received much attention and has been linked to problems with sleep, eating, aggression, and depression. Researchers have not clearly described serotonin as a primary concern in the eating disorders. However, it appears that it is a treatable factor: clinical trials with antidepressant medications have been proven effective for both depression and bulimia (Garner, 1991: Hsu, 1990 & Crisp, 1980). Interesting findings regarding the divergent reactions of male and female adolescents to low serotonin levels have been noted. Alper (1986) identified low serotonin levels in girls with BN and AN, and in boys who were delinquent and suicidal. It appears that serotonin levels, as well as hormone levels, were implicated in the expression and type of illness one presents with. Furthermore, one's biology and psychology is affected by the societal expectations for males and females.

Metabolism

The concept of metabolism has received a great deal of interest, especially from persons interested in altering their body's metabolism in order to burn calories. A key concept linked to metabolism is the basal metabolism rate, which is referred to as BMR. There is lack of agreement regarding the likelihood that metabolism rates are inherited. Halmi (1978) suggested that because the person with anorexia has engaged in prolonged fasting and/or use of laxatives there is an effect on his or her metabolism rates. He further stated that it is difficult to tease out the hereditary differences in causation from the physiological consequences of starvation, laxative use, or restricted eating.

Shils and Young (1988) described and attributed the BMR to five influences: body surface area, thermodynamic efficiency of the body, the hormone thyroxin, the type of fuel (food) ingested, and the type of activity in one's life. Given that food consumption and activity are conscious and not autonomic behaviors and are at least two of the factors involved in one's BMR many people have reasoned that they can train their body for a more efficient metabolism. This reasoning has been applied and used both successfully and unsuccessfully by dieters. A severe reduction in food intake or ingestion of food that does not fulfill the body's energy requirements can result in a less efficient metabolism. In fact, many people who have dieted for years claim that although they lose weight during a diet, they regain it and more when they stop dieting.

The body requires a certain amount of energy to maintain the body processes. Exercise is considered an important part of the energy balance equation. Garrow (1978) noted that one's BMR drops with underfeeding. Orford (1985) explained the BMR phenomenon: "This represents a rudimentary control system such that when energy supply is reduced expenditure falls, tending to protect energy stores from excessive depletion" (p.79). These facts are interesting to consider with respect to the person with activity anorexia as described by Epling and his colleagues (1991). An individual with activity anorexia exercises more and eats less and thus lacks protected energy stores. Ultimately, important muscle and protein tissue instead of fat becomes depleted when one does not maintain the energy balance equation. Another factor regarding BMR to consider is the gender differences in muscle mass. The female body has a larger percentage of body fat than does the male body; therefore, the male may be better able to maintain an efficient metabolism.

In the class given on eating disorders to the participants in this research project, a car running more smoothly because its oil and fuel levels are maintained was likened to the body's ability to burn calories more efficiently if food levels are maintained. This example was used to help the youths visualize the metabolic processes that they can control with: activity and diet. A parent of a teen who had attended this class reported that it was a positive experience for this teen because she realized that if she ate regularly and sensibly she could manage her weight better than if she dieted (Personal communication, 2000).

Some researchers implicated disturbances with the metabolic functions involved in hunger, satiety regulation, mood regulation, and impulse control to the effects of eating disorders. Brantner-Innthaler, Nasserbakht, Shih, & Steiner (1994) found metabolic disturbances after weight rehabilitation with an adolescent sample they studied. According to their results, the adolescents with restrictive anorexia required the most calories to maintain their daily weight, while patients with bulimia required the least. They added that these differences were apparent for several months and contended that their findings could be applied to greater understanding and recognition of the pre- and post-morbid characteristics of eating disorders.

Genetic Predisposition

Genetic models have been considered in the explanation of a range of somatic and psychological problems. According to the genetic approach, to have a genetic predisposition to an eating disorder is not necessarily to be born with one but to be vulnerable to exposure and mitigating circumstances. There were problems with adopting this model to explain eating disorders. First, there is little chance of substantiating claims of hereditary causes because it is impossible to separate the biological and environmental factors involved. Second, the treatment is limited to avoiding exposure of risk factors. Hsu (1990) reviewed data on twin studies and found a greater concordance rate for monozygotic twins than dizygotic twins with AN. However, he also stated that these rates are suggestive of a genetic predisposition to an environmental induction process in the pathogenesis of an eating disorder.

There were inconclusive findings regarding inherited factors of AN, BN, and other eating problems (Bruch, 1973; Christianson, 1929; & Griffiths & Payne, 1976). This researcher conceptualized the interaction of genetics and environment in a "domino-effect" progression, in which one's inherited physical size is involved in one's eating behaviors and attitudes. Essentially, for the first domino, the balance is tipped when one has inherited a large body shape and as a result engages in excessive dieting (possibly to conform to a thin societal standard). The second domino is the consequences of excessive dieting, which are a less effective metabolism and greater weight gain. The third domino in this series is the desperate attempts to lose weight that follow further unhealthy dieting and excessive exercising. This progression of frustration with unsuccessful weight control efforts despite increasingly drastic measures might potentially result in an eating disorder.

Set Point

The nature versus nurture controversy over what affects one's body size was premised on the debate of whether one inherits a ratio of fat cells and a "set" weight to which one's body naturally returns after a diet or if one develops that set point through eating behavior. Set point is generally described as the weight and level of fat tissue to which one's body naturally returns after periods of dieting.

Shils and Young (1988) noted that there are three developmental periods when body growth velocity is highest, hence these may be times when the development of the percentage of fat cells or adipose tissue are set. Interestingly, these growth periods occur during periods when a person would be vulnerable to overeating: the final trimester of pregnancy (wherein the mother's unusual eating habits are responsible for the neonate's increased fat ratio), during the first two years of life, and during adolescence.

What is of further interest to note is that during the body's high growth stages of infancy and adolescence, the corresponding cognitive and emotional processes are operating at peak levels. Throughout development, the child is focused on learning about self and about his or her world; however, identity issues are especially paramount during the adolescent growth periods. At that time, there is a reciprocal relationship occurring: eating behaviors are affected by thoughts and feelings regarding identity, and one's fat ratio and set point are fixed by these eating behaviors. In other words, if a youth is unhappy or overwhelmed, he or she may overeat, and thus his or her fat ratio is affected.

Set point is not only determined by periods of overeating but also by type of diet. This means that during key growth spurts, a high fat diet is implicated in the increases of fat ratio and the body set point. Understood this way, set point theory can be applied to explain a situation in which developmental processes, as well as the modifying influences of emotions on eating, are determining factors in one's body fat ratio.

Whether one's set point can be attributed to hereditary factors or to eating habits during critical developmental periods is unsettled. However, what appears to be true is that set point is a determinant in one's weight and diet control throughout life. Ley (1980) reviewed findings and supported this conclusion. He found that overweight people consistently regained their former weight despite continued dieting and that low weight people could not gain weight no matter what or how much they ate.

Stress and Physiological Reactions

Stress has been identified as a factor in overeating and in the refusal to eat. Bruch (1957) described several of the young patients she treated who had started overeating in response to a stressful family environment. The factor of stress has been observed in this researcher's clinical work. Some clients have indicated that the end of a stressful workday was the time they were most likely to binge. In addition, some stated that bingeing was a coping strategy that they missed once there was a reduction in the frequency of bingeing and purging. One client reported that she did not know what to do with the emotions that arose in the absence of her binge-purge coping strategy.

Dysfunctional eating behavior in reaction to stress is not limited to our complex and demanding era. Brumberg (1988) followed the history of several girls in the 1800s with anorexia and documented how they reacted to familial coddling and societal constraints commonly experienced by females at that time. She reported that starving behavior was often triggered in response to a traumatic or stressful event.

She characterized this as a psychological and physical interaction: With environmental stress there is emotional arousal, and subsequently there are corresponding neural and endocrine changes involved in the modification of eating behavior.

Rowland and Antelman (1976) implicated stress as a primary factor in the overeating situation. Through their research, they found that rats whose tails were pinched during two daily sessions increased their caloric intake by up to 129%. Another possibility with regard to stress is that the body is put into the stressful condition of starvation by poor eating habits. The body recovers and prepares for further potential starvation by storing and converting food to fat stores. There is a survival component to this type of regulatory mechanism. It is likely that when our ancestors were exposed to starvation they survived because of the increased level of eating that occurred once they found food and also because food absorption was a primary directive of their biology. Also, in association with this rationale, differences between weight gains experienced by males and females could be attributed to the biological needs of pregnant females who require an increased fat ratio in order to withstand stress and cold and to carry a baby to term and lactate.

In summation, stress was figured into the eating disorder paradigm as a survival mechanism. In situations of psychological and emotional stress, one uses food consumption or food denial as a coping strategy. In situations of physiological stress such as starvation, one's body copes and survives by absorbing and converting the food into fat stores.

Addiction Model

The addiction medical model is usually used to describe drug addiction or alcoholism. Orford (1985) suggested that an excessive appetite or overeating might be conceived in this way. This suggestion was based on the phenomenon of food craving resembling other addictions. For some persons with an eating disorder, their experience is like the experiences of people in a state of addiction or dependence in which they are overwhelmed by an uncontrollable craving and acquire a sort of habituation to overeating. In the EDI-2 questionnaire administered to the students in this research project, there was recognition that a problem with control of impulses is characteristic of an eating disorder. There are three scales that incorporate some of the problems with food addiction. These are called the *Bulimia, Impulse Regulation,* and *Interoceptive Awareness* scales.

Eating disorders may also share similarity with drug and alcohol addictions in that there is the possibility of a genetic biological predisposition. In other words, whether you become addicted to food or drugs, there is a biological vulnerability to become addicted. To support this finding, researchers have identified links to alcoholism and manic depression in families of persons with bulimia (Garner, Garfinkel, Schwartz & Thompson, 1982).

There are some compelling reasons for applying an addiction model to eating disorders, such as looking for causal factors and utilizing treatment approaches. However, there are also problems. Food is a biological necessity and thus differs significantly from other substances used by addicts. As well, some of the pessimistic prognoses for addictions are based on chemical dependency; yet the only known relationship to chemical dependency of eating disorders is the release of endorphins that result from starvation and exercise. Moreover, some foods such as chocolate have been attributed to the release of "feel-good hormones." However, in light of the parallels found in these behaviors of excess, and the consequential bodily damage incurred with them, a conceptual bridge between the addictions and eating disorders is important for the development of more progressive and effective treatments.

A final compelling rationale for considering parallels between disordered eating habits and addictions is in the experience of overeating. Essentially, people with eating disorders or subclinical eating problems may be on a "rollercoaster" of gaining and losing weight all their lives and many seem unable to free themselves from preoccupation with food. Recognition that this is a similar struggle for addicts was apparent in organizations such as Overeaters Anonymous, which are based on the principles of Alcoholics Anonymous. Generally, descriptions of how the body "gets hooked" and how one can be treated are found in addiction models. There appears to be both a "body addiction" and a "behavioral addiction" element to eating disorders.

Biomedical explanations and approaches that are considered in connection with eating disorders are included here to underscore the importance of identifying physiological factors and to acknowledge the interaction of physical factors with social and psychological factors. In the following sections, I discuss the social and psychological explanations and approaches taken with regard to eating disorders.

Sociocultural and Psychological Explanations for Eating Disorders

There are several ways to illuminate the impact of sociocultural and psychological factors on eating problems and eating disorders. One could outline the historical and current sociocultural effects in a manner similar to the way Brumberg (1988) does. One could analyze psychological constructs and theories such as perfectionism, boundaries, and learning and behavior theory, to name a few, and relate how they are relevant to understanding the functioning of self and society with respect to eating behavior (Tessier, 1993). One could also review feminist explanations for reasons why eating disorders are more common in the female populations (Orbach, 1993;Woodman, 1980; & Wolfe, 1990).

Ideally, one's approach to dissemination of knowledge is congruent with the objectives of the research. In this research project, the primary focus was to investigate the prevalence of disordered eating behaviors and attitudes. The EDI-2, a well-known psychometric instrument, was used to obtain measures of the following constructs: *drive for thinness, bulimic behavior, body dissatisfaction, impulse regulation, social insecurity, maturity fears, aestheticism, interpersonal distrust*, and *ineffectiveness*. These constructs were primarily derived from psychological and sociocultural factors. Therefore, in this discussion, approaches that pertain to psychological and sociocultural perspectives of eating disorders are presented. As well, there are historical descriptions of eating disorder occurrences in order to illustrate the interaction of society and psychology and their possible effects on the self.

Sociocultural Explanations and Approaches

A predominant theme when considering sociocultural factors was one of society affecting the individual. Philosophers claim that we truly only become human through socialization. Whether we are "animal loquens" as described by Ernst Cassirer (1976) or "socialized individuals" as described by Lev Vygotsky (1986), it seems clear that the individual's thoughts, behaviors, and emotions are in part affected by society. A sociocultural perspective is comprehensive in the sense that one can consider the impact of several societal and cultural variables involved in eating disorders, such as the effects of family and peers, and the peripheral effects of school, media, workplace, and the economic or power structures of government. A predominant goal taken with a sociocultural perspective is the exploration into how individuals act, think, and learn in the social aspects of their lives.

There is general agreement in the many arenas of psychology, sociology, and philosophy that society influences an individual from infancy to death. The roots of the "society effect" start with the "eating" infant who develops not only physically but also socially and emotionally when fed. Erikson (1963) proposed that related psychosocial needs such as security and love are attained in the nurturing process of feeding. When the psychosocial needs are fulfilled, the child develops a resilient self-esteem and can confidently explore his or her world. Maslow (1968) conceptualized human needs in a hierarchy and specified that one's most basic needs are food and security. Mitchell (1973) summarized that the psychological needs fulfilled during infancy and adolescence are: needs for affection, security, acceptance, self-respect, achievement, recognition, independence, and order. Overall, these needs are considered necessary in order for the child to actualize potentialities. Essentially, the early eating scene of nurturing interactions between infant and parent is the foundation for a plethora of emotional development.

Beyond the importance of nurturing, and the representative power of food on the child, social eating behavior rules are also acquired. During meal times, a child learns the rules of sharing, etiquette, and conversation. Healthy and natural eating conditions are considered important not only in meeting the biological needs of the child, but also in presenting opportunities to develop trust and to bond with his or her family and to learn social rules and interactions.

Empirical and theoretical researchers have noted how gaps in the simultaneous satisfaction of one's biological, social, and psychological needs are involved in occurrence of eating disorders (Sours, 1980; Griffiths & Payne, 1976; &

Rosiechuk, 1987). Steinhausen, Boyadjieva, and Neumarker (1995) reviewed and cited researchers who identified sociocultural factors in the etiology and maintenance of eating disorders (DiNicola, 1990a & 1990b; Garfinkel & Garner, 1982; Garner, Garfinkel & Olmsted, 1983). They summarized from these sources and cited the following conclusions:

> (a) there is a female predominance; (b) middle and upper classes are more frequently affected; (c) the incidence is increasing; (d) there is a development gradient across cultures in this type of Western illness; (e) certain types of occupation such as dancers, models, or athletes carry a greater risk; (f) developmental, family, social and cultural factors serve as predisposing elements, and (g) life stress events function as precipitating factors (p.37).

Because of the several factors identified with eating disorders, many practitioners and researchers of eating disorders now recognize the necessity for multidimensional approaches (Russell, 1986, & Garner, 1991). A multidimensional approach is described as one in which physical, emotional, social and psychological factors are acknowledged and addressed. These factors are discussed in the following sections in order to illustrate how historical and current sociocultural factors are applied to eating disorders.

Historical Accounts of Eating Disorders

By drawing upon historical accounts of eating disorders, one is able to trace the evolution of the perception of the body in society. There are several historical accounts of women with eating disorders; this is primarily because there are fewer instances of eating disorders in males throughout time. Nevertheless, there are some early occurrences of eating disorders in males documented by Morgan (1694) and Gull (1874). In addition, researchers have indicated increasing numbers of eating disorders in males (Anderson, 1985; Crisp & Tom, 1972). For the most part, however, it is generally agreed that there is a greater impact of society on the female identity than on the male identity. Feminists such as Morgan (1984), Freedman (1988), and Friedan (1986) and other researchers such as Brumberg (1988) have described the historical and current impact of society on the female body.

Brumberg (1988) provided an account of the female's drive for thinness throughout history. She contended that women have used control of appetite, food, and body to communicate their frustrations. She also suggested that the meaning of self-imposed starvation has changed. Eating disorders were noted as occurring in the context of aesthetic, altruistic, and religious statements. For example, St. Catherine of Sienna, who lived during the Middle Ages, existed on a handful of herbs each day. Ross (1992) described altruistic motivations for starvation in the early Aboriginal hunter-gatherer society. He reported that the aged and infirm would voluntarily walk off into blizzards to die when food was in short supply so that the younger generation could survive. There is limited historical documentation regarding instances of bulimia; this is likely due to the differences in the two eating disorders. The AN symptoms of abstinence and self-starvation are more politically drastic than are the BN symptoms of overeating and purging.

The few historical accounts of persons with bulimia were gathered from inferences made from depictions of earlier eating practices in film and literature. In the Fellini-like films of Ancient Romans, characters were shown eating excessively and then using vomitoriums to purge the food. Visser (1992) cited Erasmus (1530) in his treatise *de civilitate* and concluded that bingeing and purging occurred and was judged negatively in earlier times. "Withdraw when you are going to vomit; vomiting is not shameful, but to have vomited through gluttony is disgusting" (p.67).

Susan Orbach (1993) is a psychotherapist who works in the area of eating disorders. She suggested that the present-day fascination with eating disorders is a potential factor in the increased prevalence of bulimia. According to her, some desperate dieters learn about weight-management strategies from eating disorder literature or presentations and embrace the dangerous weight control measures such as purging and the ingestion of laxatives and ipecac.

Laverty (1995) outlined the progression of eating disorders in women and related their occurrence to art and fashion dictates. She reported that artists throughout time, especially during the Renaissance, "...modified the characteristics of the female body, while the depiction of the male body remained constant. They were either Herculean, muscular and massive, or Apollonian, blonde and lissome" (p.10). She stated that such dictates of fashion on the body started most notably in the 18th century, a time when the body was altered to fit the fashion because of the introduction of mass production of clothing. In other words, women had to alter their body size to fit the clothes, whereas in former times the clothes were altered to fit the women.

Today, eating disorders are more often attributed to media influences and societal idealization of the thin body. Wolfe, (1990, 1997) in her books *The Beauty Myth* and *Promiscuties*, contended that some women submit themselves to rigorous diet and surgery to achieve the ideal beauty image. This is a dangerous practice because societal perception of beauty changes. For example, the average Miss America contestant's weight has dropped from 134 pounds in 1954 to 117 pounds in 1980. As well, the average female model has 25% less body weight than the average North American female. In school programs such as the *B.C. Eating Disorders Curriculum* (1999), there is acknowledgement of societal effects on one's drive for thinness and body dissatisfaction. For example, included in the lesson plans are activities in which the students are encouraged to critique magazines and media for misleading and destructive body image messages. Levine and Smolak (1998), who have researched the effectiveness of eating disorder prevention programs, also emphasized the need to include instruction on media analysis.

Family Factors in Eating Problems and Disorders

Family factors have been considered in both the historical and recent research on eating disorders. The following is a review of the research that is intended to investigate the relationship between eating disorder onset and maintenance, genetic factors such as family traits, and comorbidity within families. In addition, the eating disorder research with regard to family dysfunction and family culture are reviewed.

Familial aggregation has been noted in studies of persons with both AN (Strober, Lampert, & Morrell, 1990), and BN (Kassett, Gershon, & Maxwell, 1989; & Hudson, Pope, & Jonas, 1987). Researchers of the concordance rate for AN and BN in twins found convincing results: There is a higher rate of incidence for monozygotic twins than for dizygotic twins (Holland, Sicotte, & Treasure, 1988; Kendler, MacLean, Neale, Kessler, Heath, & Eaves, 1991). Steiger and Stotland (1995), who cited this research, cautioned that the concordance rate is more evident with AN than with BN (p.55).

The hypothesis that a person is more vulnerable to an eating disorder if there are mood disorders or related psychological disturbances in a family member has long been a controversial topic in the research. In support of this hypothesis, Piran, Kennedy, Garfinkel, and Owens (1985) conducted controlled studies of lifetime prevalence of mood disorders and reported that many of their subjects had relatives with an eating disorder. On the other hand, researchers such as Kassett et al (1989) and Strober et al (1990) related that it is more often the case that the probands themselves, not their families, have the mood disorders. One final proposal, which is still debated, is that the family-genetic effects involved are inherited traits such as perfectionism, which is often characterized in the profiles of individuals with eating disorders (Crisp, Harding & McGuinness, 1974; Garfinkel, Garner, Rose, Darby, Brandes, O'Hanlon, & Walsh, 1983; & Casper, 1990).

Family dynamics have also been studied for their effect on the presentation of an eating disorder in a son or daughter. Earlier in this century, Margaret Mead (1940) observed that the American middle class child-rearing practices are premised on conditional love. She described the situation as the following: "Parents show affection when their child outstrips another in competitive enterprises and become disappointed and distressed when their child lags behind others" (p.45). This type of family dynamic could very likely set in place a pattern of perfectionism and instill feelings of ineffectiveness. Perfectionism and feelings of ineffectiveness are two factors related to eating disorders. These constructs are included as scales on the EDI-2.

The concept of a "family culture" of concerns around body image, weight, and eating has also been postulated in eating disorder research. There have been inconclusive findings regarding family culture and eating disorders. Hill, Weaver, and Blundell (1990) and Pike and Rodin (1991) identified a link between a mother's eating attitudes and the influence she has on a daughter's beliefs and behaviors around eating. Researchers who work with clinical samples have related that they found parents of eating disorder sufferers who present with both normal and abnormal eating attitudes (Hall, Leibrich, Walkley, & Welch, 1986; Garfinkel et al, 1983; Hall & Brown, 1983; & Wold, 1985).

Families with a child, teen, or young adult with an eating disorder have been studied in order to identify patterns of interactions. Steiger and Stotland (1995) described families of children with anorexia as "enmeshed, conflict-avoiding" families who "limit autonomy" and who have "oedipally-tinged"alliances. These researchers based these descriptions on their findings and on collaborative examples they found in their research (Owen, 1973, & Houben, Pierloot, & Vandereycken, 1989). For example, Owen (1973) noted instances of mothers of anorexics who were overly identified with their daughters. In addition, Houben et al (1989) described family patterns of eating disorder patients: Many had strong attachments to mother and father-daughter boundary problems. Families of children with BN were described as "incohesive, disengaged, high in conflict, and limited at expressing feelings, and with destructive over involvement in their children's lives" (Wonderlich, 1992; & Johnson & Flach, 1985). These researchers contended that the greater the degree of family dysfunction, the greater the severity of BN symptoms.

The differences that exist between restrictor-binger eating disorder types have also been studied with respect to family dynamics. Steiger and Stotland (1995) summarized the findings from these studies. They stated that there are "two broad and opposing tendencies – one linking dietary restraint to familial enmeshment and conflict avoidance, the other linking symptoms of bulimia to open conflicts and hostilities" (p.61). These tendencies were noted in some of the family differences found between the families of persons with anorexia or bulimia.

Peer Factors in Eating Problems and Disorders

Peer group behavior and influence have been found to be important socializing agents in many arenas of one's life, especially during adolescence. Erikson (1963) described adolescence as a period of growth in which either role identity confusion or role integration occurs. It is very likely, then, that group pressures are involved in an adolescent's behavior and self-evaluation. Given the findings of eating disorder onset during this developmental period, an awareness of the impact of peer influences is important and necessary (Garner, 1991; Steinhausen, 1995 & Vandereycken & Noordenbos, 1998).

In the following sections, the impact of peer influence on eating disorders is accounted for in three areas of functioning: group deviancy or conformity, gender roles, and the effects of peers on social confidence and self-esteem.

Group Deviancy or Conformity

Rubington and Weinberg (1968) described deviancy theory to account for behavior that involves breaking societal rules. This behavior might also be considered an important contributor to one's development because identity formation necessitates breaking away from the social norms of parents. This phenomenon is particularly notable in the adolescent's need to develop fashions that are different from the adult population. Deviancy theory can be applied to eating disorders, particularly because "body image" is one aspect of an individual's identity.

Both starving and bingeing have been identified as deviations from normal eating behavior. Which behavior occurs seems to depend upon one's relative identification with the peer group. In the arena of food, finding a group that one can identify with, and share one's eating and dieting behaviors, is a factor in reducing the stigma of deviation from the larger population. In this way, deviancy is a matter of social definition: one conforms to the peer group and deviates from another, larger group. For example, Paxton and Schutz (1999) found that youth in cliques that ranked high in body image concerns and dieting behaviors manifested these concerns in ways consistent with a weight/shape-preoccupied subculture. In addition, Tessier (1993) found that group identification with peers that have similar disordered eating behaviors and attitudes often involved sharing methods of purging, such as vomiting together and discussing effective laxatives.

Another aspect of group conformity or deviancy to consider is the peripheral effects of peer "role-models" portrayed in the various forums of media. Magazines, television, newspapers and movies are considered influential contributors to the conformity to a prescribed body image. This was particularly apparent in youth that identify with role models and modify their eating and exercising behavior. Judith Rich Harris (1998) wrote the controversial book *The Nurture Assumption*, in which she addressed the topic of peer influence. She suggested that children are more affected by their peers and the peer role models they view in media than they are by parents and other authority figures. Relevant to the hypothesis that adults play a minimal role in an adolescent's behaviors and attitudes, Levine and Smolak (1998) reported disappointing results from eating disorder prevention programs that are didactic in nature and are taught by adults. They recommended use of a participatory approach in order to facilitate greater interaction among peers on topics of healthy eating and dieting.

Interaction of Gender Roles in Eating and Dieting

It is generally understood that teenage girls and women share their food interests and dietary habits and concerns more than men do. Food preparation has historically been the domain of the female; therefore, a degree of preoccupation is expected, especially if female teens identify with female role models and peers. This in itself is not a destructive activity; however, girls with eating disorders go beyond healthy preoccupation and exhibit abnormal behaviors and attitudes regarding food and thinness and couple their self worth with their body size.

The female diet and image concerns have been documented in several studies and have been accounted for in several different ways (Byrne, London & Reeves, 1968; Centers, 1972; Guy, Rankin & Norvell, 1980 & Deaux & Hanna, 1984). Herman and Polivy (1980) found that women weigh themselves more often than men. Mori, Pliner, and Chaiken (1987) noted that contemporary American women are more concerned with body weight, food, and eating than are men. Mori and his colleagues contended that women exhibit heightened preoccupations with weight and dieting because of the propensity in our society to equate a woman's attractiveness and success with thinness. In their research, they discovered gender biases in perception of masculinity and femininity. Essentially, both male and female subjects rated a male normal-weight silhouette as most masculine but rated only the thin-female silhouette as most feminine. Following these research findings, Mori and his colleagues conducted a further study regarding the relationship between one's eating habits and the effect of self-image and beliefs about people's perceptions of feminine attributes. They found that women ate less when motivated to present themselves in a feminine light, especially when they were in the company of an attractive male, but found no similar pattern with males. Their findings were interesting to consider because they are prime examples of how gender differences regarding food, body image, and diet are enacted.

Psychological Factors and Approaches

There is little doubt that a societal obsession for thinness exists in North America. It is especially apparent in females. It also is evident that eating disorders occur more frequently in females than in males. Given these conclusions, many researchers have been led to investigate the gender differential and in doing so have noted the distinctly different impact of social and psychological forces on males and females. It appears that the female individual internalizes societal body images more than the male individual does. In this section, I discuss potential psychological factors involved in such adherence to societal standards as well as other psychological factors that are notable in the occurrence of eating disorders.

Explanations regarding psychological functioning have long been contemplated in several different disciplines. Three primary areas of psychological functioning that have undergone a great deal of scrutiny by eating disorder researchers are personality traits, cognitive styles, and attachment patterns. In the realm of personality, it appears that the general risk profile symptoms for anorexia are anxiety, obsessiveness, perfectionism, and overcompliance (Crisp, 1980; Casper, 1990 & Cooper & Fairburn, 1985). The risk profile symptoms for bulimia was described as emotional lability, depressed mood, and counter-phobic independence (Garner, 1991; Hsu, 1990; Cooper & Fairburn, 1986 & Anderson, 1988).

Adolescents with eating disorders have difficulty with certain cognitive tasks, such as conceptualizing realistic images of their bodies and forming appropriate attitudes regarding the mastery of their bodies (Rosenbaum, 1993 & Frielander, 1990). In the area of attachment, Steiner, Sanders and Ryst (1995) explored issues of separation and individuation and found that they are related to an anorexic adolescent's fear of growing up and becoming independent. Discussion of the personality and cognitive styles and attachment patterns is integrated into the following discussion of psychological topics often investigated in the eating-disorder research: self-esteem and social confidence, perfectionism, body image, and separation and individuation concerns.

Self Esteem and Social Confidence

Rosenberg (1989) proposed that there is heightened awareness of self-image in adolescence. He stated that adolescence is a time of major decisions, especially in late adolescence, when one asks, "What will I do" and/or "Who will I be?" As well, it is a time of exceptional physical and psychological changes in which the adolescent's picture of self is "shaken up"(p.4).

There is little doubt that adolescence is a time of identity issues, particularly those that that are involved in one's self esteem and social confidence. Researchers who have focused their efforts on understanding the role of self-esteem in eating disorders distinguish gender and age as key factors. Button, Sonuga-Barke, Davies & Thompson (1996) investigated the role of self-esteem in the etiology of an eating disorder. They administered self-esteem questionnaires to 594 girls between the ages of 11 and 12, and followed up 3 to 4 years later with questionnaires intended to measure eating behaviors and psychological problems. They found that girls with low self-esteem are at risk for eating disorders by the ages 15 to 16. Sugar (1993) reviewed a survey conducted by the American Association of University Women (1991) with 3000 children. He reported that they found that confidence, assertiveness, and positive feelings decline with age in girls more often than in boys. They also discovered that at age 8 to 9, 60% of girls were confident and assertive, and had positive feelings about themselves, and by the 10th grade, only 29% felt that way. In contrast, 67% of boys were confident at age 8; and by age 14, 46% maintained confidence.

Parsons, Ruble, Hodges & Small (1976) extrapolated from concepts articulated in attribution theory and suggested that socialization mechanisms regarding one's performance are affected by sex-role stereotypes. This researcher proposes that this theory can be applied to explanation of eating disorder occurrences, especially because one's self-esteem can be weak or fluctuating during adolescence.

Parsons and his colleagues (1976) asserted that the adolescent's attribution of success or failure is influenced by socialization processes such as the differing expectations shown by parents and teachers for males and females. They found that males are more likely to attribute success to internal factors such as hard work and abilities and to attribute failure to external factors such as luck and difficulty of the task, whereas females exhibit an opposite attribution pattern. Applying this finding to eating disorders, one might predict that females attribute problems with their weight and appearance to failures in their own ability to control food intake and exercise and attribute success in weight control to external factors. To corroborate this speculation, some researchers have noted the tendency for girls with BN and BED to generalize devaluation of themselves to several areas of self-image (Garner, 1991, American Psychiatric Association, 1994, & Cooper & Fairburn, 1986). In a similar line of reasoning with regard to eating disorders, one might expect that males attribute failures with regard to their weight and appearance to external factors, and successes in weight management to their own ability to control food intake and exercise.

The psychological impact of parents' and teachers' sex-role stereotyping is not considered the only source of self-esteem problems in the eating disorder paradigm. Peers can also affect each other's self-esteem and social confidence. Nylander (1971) found that although children share in their love of junk food they disapprove of overweight friends. He noted that pervasive negative attitudes toward obesity are developed young in life. He also indicated that overweight children suffer peer ridicule more than other children. This finding was also described in research conducted by Richardson, Hastorf, Goodman, and Dornbusch (1961), Staffeieri (1967), and Hill and Silver (1993).

It is possible that the impact of peer ridicule and related exclusions from social opportunities is harder on children as they age. Mendelson and White (1985) and Hill (1993) found that overweight nine-year-olds with low body esteem do not differ from their peers in global self-esteem, but by age thirteen those with low body esteem also demonstrate poor global self-esteem. Stafferi (1967) conducted a study regarding "fat person" stereotypes in children and discovered that stereotypes are well established by the age of seven. He attributed this early prejudice to the negative adjectival attributes such as "mean" and "lazy" often assigned to endomorphs, people with rotund body shapes. Dwyers, Feldman, Seltzer, and Mayer (1967) reported that obese girls have fewer dates and other social activities during the teen years and that they experience lower acceptance rates into high-ranking colleges.

Steiger and Stotland (1995) put forth the idea that, while theories on the psychopathology of eating disorders are diverse, there is some consensus on the belief that eating syndromes express underlying "self" or "self image" disturbances that are modified by one's social setting (p.50). They compared the psychopathology related to self-concept that is found in the restrictor-type of anorexia with the binge/purge-types in both anorexia and bulimia in order to illuminate the processes involved in self-image disturbances. Essentially, they proposed that one could conceptualize the restrictor-type as "being structured around defense from the outside influences, and the binge/purge-type as being outwardly directed in a quest for self-soothing and need-fulfillment" (p.51).

Perfectionism

Perfectionism is described as the expectation one has of superior performance in oneself and the belief that others also require that of them. When perfectionism is a primary personality characteristic, a person may tend to direct excessive emotional and physical energy towards superior performance and, even in the face of obvious successes, tend to remain highly critical of oneself. Essentially, perfectionism is impossible, because no matter how well one does, it is never satisfactory.

For someone with an eating disorder or significant eating problems associated with body image concerns, perfectionism comes into play when one treats their body and health secondary to body size ideals. Individuals who are perfectionists are considered more susceptible to developing an eating disorder in response to external factors, potentially even from the iatrogenic effects of instruction or testing for eating disorders. Perfectionism is a trait often identified in persons with AN (Garner, 1991; Bruch, 1979 & Lee, Hsu, & Wing, 1992). Garner (1991) included perfectionism as one of the scales on the EDI-2.

Bruch (1973) maintained that the dynamic occurring between perfectionism and eating disorders is that once one internalizes the perfectionist standard of an ideal body image, the individual has minimal emotional distance or boundaries against influential messages regarding body size. Furthermore, individuals who are perfectionists with severe eating disorders are often resistant to treatment. This is attributed to their internalization of social messages in which they believe they are rewarded for an increasingly thinner body (Wheeler, 1990; Levine & Smolak, 1998 & Davies & Furnham, 1986).

Perfectionism as a trait in BN is not as clearly evident as it is in AN. However, Peterson, Schulenberg, Abramowitx, Offer, and Jarcho (1984) found perfectionist strivings along with other personality factors such as feelings of ineffectiveness, depressive symptoms, and self-regulatory deficits in cases of adolescents with bulimia. Considering these findings from a feminist perspective, one might postulate that a large part of the personality factors identified in eating disorders are the result of societal expectations placed upon females. Some examples of the perfectionism that are gender specific are described by Naomi Wolfe's (1990) depiction of the "beauty myth." She proposed that people have consciously or unconsciously accepted "a beauty standard." Greer (1984) stated a feminist interpretation of eating disorders and body image succinctly, "The social body constrains the way the physical body is perceived"(p. 121).

The historical roots of perfectionism are not as well documented in eating disorder literature as the other constructs and behaviors such as drive for thinness, body image, and dieting practices. However, writers in philosophical and sociological disciplines have generally depicted perfectionism as both an individual and societal trait. To understand perfectionism as a societal trait, one might liken it to the "individual writ large," because societal standards have varied throughout time to affect individual behaviors. The early Greeks' described a "perfect human" as an individual who followed the pursuit of higher knowledge and bravery. Although standards for ideal male beauty have changed little, the standards for female beauty have changed with society's ideals. In early statues and paintings, the "ideal female beauties" are featured as large, Rumanesque-like figures. In contrast, during the 20th century, the thin figures characteristically found in films and photographs were considered beautiful.

Studying history is not the only way to observe varying depictions of perfection. There are several ethnic and cultural groups that are noted for their idealization of larger figured females. The differences between cultures regarding "ideal body size" are evident even in commonly heard expressions. For example, one might hear the saying in North America, "You can never be too rich or too thin." In contrast, the Hong Kong greeting, "You have put on weight" is considered a compliment (Lee, Hsu, & Wing, 1992). Unfortunately, the perfectionist standards and high expectations characteristic of our North American society are catalysts for chronic dissatisfaction with one's body and self. Feminist writers such as Wolfe (1990) and Brumberg (1988) attributed the rise in perfectionism over the past decades as being partly responsible for the rise in eating disorders.

Overall, it appears that the roots of perfectionism are attributed to individual personality styles and to social influences. Perfectionism is often discussed in eating disorder prevention curriculums and programs because it is believed to be a risk factor in the eating disorders (Levine & Smolak, 1998; B.C. Eating Disorder Curriculum, 1999 & Piran, 1998). Consequently, it is considered important to alert students to any unrealistic perfectionist standards they may apply to themselves. A further rationale for including a discussion of perfectionism in eating disorder prevention programs is to make students aware of the diverse body size standards of earlier times and throughout various cultures. Ideally, with such knowledge, students will be better equipped to identify and critique the negative impact of societal standards on their own body images.

Body Image

Puberty is a time of extensive change in the body, and so a cohesive body image is hard to attain. Rosenbaum (1993) articulated this adolescent challenge in his explication of body image. "The picture of our own body which we form in our mind is a plastic, constantly changing concept, continuously modified by bodily growth, trauma, or decline, and significantly influenced by the ever changing interaction with the social environment" (p.63). Disturbed body image, then, is a prominent feature of the eating disorders. Garner (1991) included a scale called *Body Dissatisfaction* on the EDI-2 to assess body image concerns.

Rosenbaum (1993) is a doctor who has worked with adolescent girls that present with various types of psychopathology. In his clinical practice, he has found that these girls experience the body as a reflection of the self so that it can be "a source of conflict, shame and inadequacy as well as a source of pride and pleasure" (p.62). To determine "body image" experience in the general population, he interviewed thirty 11-17-year-old, normal, healthy female adolescents about their body and body image. Some of his findings are useful to consider here, because he provides their qualitative descriptions of body image and dissatisfaction.

Rosenbaum (1993) asked the girls what they would change about their bodies if they had three wishes. He reported that their most common wish was to "lose weight and keep it off." Other wishes were clustered around similar themes regarding appearance and "fitting their looks to society's stereotypes of beauty." He indicated that most of the girls devalued or undermined their looks. He concluded in this study that all the girls were painfully aware of the value society places on the attractiveness of females.

Age and maturity are noted for their role in body image; acceptance of increases in one's body size occurs with maturation. Rosenbaum (1993) found that the early adolescent girls were most concerned about their breasts, while 16-17-year-olds stated that "people should like them as they are." Essentially, he discovered that younger girls were more concerned with minor imperfections and flaws while the older girls were more accepting of their body-selves. He also noted that the girls who were physically active were more accepting of their own bodies. Finally, he observed that the levels of self-esteem and self-confidence the girls exhibited fluctuated with the state of their body image.

Rosenbaum (1993) found that it takes girls longer than it takes boys to accept their growing and changing bodies. He also noted that it was difficult to get the girls to find something positive about their bodies, although they easily discussed aspects of their bodies that they did not like. Apparently, many girls mentioned their hair as a positive part of their body.

Although the subject of hair is a departure from body image concerns that primarily revolve around weight, it is interesting to note references to hair in other eating disorder research. In the eating disorder literature reviewed by Laverty (1995), hair was described as a starting point of disagreement between the adolescent and parent. She proposed that determining the color and length of one's hair is symbolic of owning control over one's body. Another conceivable interpretation regarding ownership of one's body that can be related more directly to body image is that control of one's appearance, whether it be regarding hair or body size, is an important step in the separation and individuation developmental processes in which the adolescent separates from the parent. Rosenbaum (1993) suggested that in cases of faulty separation from the parents, such as the anorexic girl who literally starves herself back into childhood, it might be a case of avoiding this developmental separation (p.65). Clearly, body image and other psychological processes such as separation/individuation developmental processes are associated.

Rosenbaum's research and accounts of his clinical experiences are choice examples of the impact of body image on girls in clinical settings as well as in the general population. One explanation for these findings is that an ongoing excessive concern about body image occurs when a girl is psychologically vulnerable to external influences and may not have experienced enough protective factors to sustain her actual self-image. Considered from this viewpoint, the extent of society's influence on eating and self-image may well be regulated by one's innate and learned ability to sacrifice the self and one's vulnerability to opinion.

There is less documentation regarding the interaction of the male's body image and eating disorders. Image and body concerns that are prevalent in males that have been noted to be potentially involved in eating disordersare generally that males are asked to be masculine yet sensitive. Anderson (1988) contended, "Males are being asked to develop a fit, mesomorphic athletic appearance, an indifference to danger, an egalitarian attitude toward women, along with a sense of humour, and the sensitivity of a poet" (p. 66).

Separation/Individuation and Boundary Problems

Rosenbaum (1993) defined the concept "separation and individuation" as a developmental process in which the adolescent must learn to manage the tension between growth and the desire to regress. Blos (1967) and Mahler (1963) are attributed with initial clarification of this psychological concept; however, it has since been applied to explication of a range of developmental concerns. In the eating disorder research, problems with meeting this developmental challenge were characterized as maturity fears (Crisp, 1965 & 1980 & Frielander, 1990). Garner (1991) included maturity fears as a scale on the EDI-2. I include formulations and descriptions of "separation and individuation" from a range of disciplines in order to illustrate the psychological processes associated with maturity fears.

Frielander (1990) queried the relationship between difficulties that a person experiences with separation/individuation and the cognitive-behavioral indicators characteristic of eating disorders. Based on results from self-report measures she administered to 124 college women, she proposed that difficulty with psychological separateness is one cognitive-behavioral indicator characteristic of eating disorders. She described this difficulty as the inability to separate self from opinion and as one's own thinking and behavior patterns. She contended that such psychological separateness is more difficult for females than for males and suggested that this is one reason for greater occurrence of eating disorders in females than in males.

Leite (1979) coined the term "boundary" to describe the degree of psychological separateness people have from one another. He stated that for persons with separation and individuation problems, "The boundary between themselves and others is so permeable that they cannot tell where they end and others begin" (p.48). He proposed that healthy boundaries are especially problematic in adolescence because youth are in a position of minimal impact in society and thus search outside themselves for validation of their identity. It is interesting to note that in more group-oriented societies, separation and individuation processes are fostered by puberty rites intended to assist the youth with claiming an adult identity (Mead, 1942; Brooks-Gunn & Reiter, 1985 & Carlick, 1995). In those societies, boundaries are not considered a concern, nor are eating disorders characteristically prevalent.

Essentially, separation and individuation processes are normal and necessary components of the development of healthy self-esteem and identity. In adolescence, the key psychological challenge appears to be the ability to separate one's identity from parents and other external authorities. For youth, this is even a greater challenge because they have more vulnerable psychological boundaries and because this is a time of transition of identity from childhood to adolescence and onward to impending adulthood. A credible explanation for the occurrence of eating disorders is that adolescents with weak psychological boundaries who also are challenged by the separation and individuation developmental processes are more vulnerable to external influences such as the opinions of others and media messages regarding body size.

Conclusion on Sociocultural and Psychological Explanations and Approaches

The sociocultural and psychological topics were reviewed in order to consider the range of influences potentially responsible in the onset and maintenance of an eating disorder. Historical accounts were discussed to illustrate societal impacts on the prevalence of eating disorders. The psychological traits and developmental challenges that are viewed as related to eating disorders are perfectionism, body image, maturity fears, separation/individuation and boundary concerns, self-esteem, and social confidence. The social situations that were examined are family factors, peer factors, and group acceptance factors of conformity and deviance.

Thus far, in the literature review, a wide range of literature and research on eating disorders was included. The general consensus is that eating disorders should be understood and treated from a multidimensional perspective, because many factors appear to be involved in the onset and maintenance of an eating disorder (Garner, 1991; Hsu, 1990; Russell, 1993; Rothenberger, 1995; & Shisslak, Crago, McKnight, Estes, Gray, & Parnaby, 1998).

In the remainder of this literature review, there is discussion of topics more specifically related to eating disorders in adolescence and to the demographic variables investigated in this research project, age, grade, gender, ethnic background, ethnic diet, and residence. In addition, findings regarding eating disorder occurrence in urban and rural settings are reviewed. There is little documentation in the eating disorder literature concerning factors such as ethnic diet and residence, so extrapolatations from a range of disciplines are presented in order to depict how these variables might be involved in disordered eating behaviors and attitudes.

Adolescence

Adolescence is a time of unique developmental challenges. There are significant biological and cognitive changes. In addition, the adolescent experiences fluctuating emotions that are common in this developmental stage. In the midst of notable biological, cognitive, and emotional changes, adolescents are internally and externally driven to establish self-identity within their social and cultural milieu. Thus, with these changes and demands in mind, adolescence is conceptualized by some as a time of "turbulence," "craziness," or "storm and stress," and by others as a time of normal developmental tasks (Freud, 1958).

Adolescent psychological concerns that have been documented in the eating disorder literature, and that are tested in this study, such as body image, self-esteem, maturity fears, interoceptive awareness, and impulse control, are viewed as cornerstone experiences of the adolescent growing experience. Consequently, concerns voiced by researchers of eating disorders in adolescents are necessary to consider. Steiner, Sanders and Ryst (1995) indicated that the primary task faced by researchers of eating disorders in adolescents is to be able to distinguish between normal growth factors and eating-disorder symptoms. Their concerns are described in the following quote in order to illustrate issues involved in this formidable task:

> Developmental issues also cloud interpretation of this kind of research, as we don't know if psychopathology looks the same at different ages. For example, the drive for thinness and dieting in a fourteen-year-old could manifest quite differently in a child of eight, as the current epidemiological studies tell us: At age eight speaking of dieting results in no or small changes in caloric intake; in mid-adolescence, however such statements seem to be tied to some form of purgation. Normative cognitive distortions at younger ages may also mimic the abnormal body image distortions found in eating disorder patients of older age (p.95).

Screening for Eating Disorders in Adolescents

With the above caveats in mind regarding adolescent understanding, there has still been a great deal of research regarding eating disorders in this age group. This has been achieved primarily with questionnaires and/or follow-up interviews and by retrospective studies of individuals who have been diagnosed and/or recovered from eating disorders. In this section, there is discussion of both of these methods in order to provide a baseline understanding for the following sections in which prevalence rates and research regarding adolescents are reviewed.

Steiner, Sanders and Ryst (1995) indicated there are problems with a retrospective approach primarily because of the difficulty in separating existing from pre-existing factors in the onset and maintenance of eating disorders. They contended that no one is yet sure of the time it takes to return to baseline functioning and that any remaining biological or psychological traits could as likely be attributed to the effects of malnutrition in an eating disorder as they could be to pre-existing traits. They referred to the famous study done by Keys, Brozek, Henschel, Mickelsen and Taylor (1950) on the results of starvation to illustrate their concerns. Essentially, starving males in a camp for conscientious objectors exhibited prolonged biological and psychological changes long after their self-starvation ended (p.97). The current strategy of many researchers now is to identify risk factors in young subjects with and without eating disorders from both clinical and general populations.

The study conducted by Flament, Ledoux, Jeammet, Choquet and Simon (1995) is a choice example of screening efforts that can be applied in eating disorder research. The comprehensive study was completed in two stages. The first stage of the research involved a whole population survey in which they administered questionnaires to randomly selected junior and high school students (*n*=3527). The second stage involved clinical interviews with three groups of youth from the large sample. The first group was formed based on eating disorder symptoms and recent hospitalization for an eating disorder, and the second group was formed based on depressive symptoms and recent hospitalization for suicide attempts. The third group consisted of controls of the same age and gender. They found that preoccupation with weight, body image, and dieting is prevalent in clinical and general population adolescents. The prevalence rates for BN in their study were estimated to be 1.1% for girls and 0.2% for boys. They also noted that as early as 12 years of age there were occurrences of vomiting and use of laxatives and diet pills, with increases in the frequency of these behaviors by age 14. They concluded that because these problems are widespread, appear early, and increase in frequency by age 14, there is a need for more research of both the clinical and subclinical forms of BN.

Other reasons to conduct screening research for eating disorders are to ensure that treatment is provided early in the eating disorder and with the objective of prevention in mind, to identify subclinical features or at-risk behaviors and attitudes. In addition, Garner (1991) and Shoemaker (1998) noted that eating disorder behaviors are often kept secret for many years and that patients only seek help when the disorder is at unmanageable levels.

Risk and Protective Factors in Eating Disorders in Adolescents

One rationale for conducting screening and/or prevalence research of disordered eating behaviors and attitudes are that results might potentially be applied to the identification of the precursors of eating disorders. Another rationale for studies of prevalence is to identify and understand what protective factors are involved. This is in keeping with the objectives that are stated in the resiliency research: to understand how some individuals are able to develop into healthy and successful adults despite difficult origins (Jessor, 1998). A final rationale for conducting prevalence research is that the results can be utilized in designing prevention programs specific to the group being assessed. In the final chapter of this dissertation, there is discussion of how eating disorder prevention programs can be applied to the Whitehorse youth.

Risk factors can be examined for their role in the onset and maintenance of an eating disorder. Some researchers have focused on the identification of risk and prognostic factors involved in the maintenance of an eating disorder. Engeland, Ham, Furth, and Strien (1995) reviewed the literature on prognostic factors in eating disorders. They found research supporting the supposition that eating disorder behaviors, personality, support systems, and body image are all factors in one's prognosis. In adults, poor outcome was predicted by extreme weight loss, bingeing, vomiting, abuse of laxatives, social isolation, low self-esteem, premorbid personality disorders, and distorted body image. Good outcome was related to good family relationships and a short duration of illness prior to clinical treatment (Steinhausen et al & Herzog et al, 1988).

For adolescents, Engeland et al (1995) found that gender, duration of illness, and weight loss were variables not necessarily involved in one's prognosis, although they acknowledged that these variables have been listed as risk factors. Engeland et (1995) cited research suggesting that variables related to poor outcome were: certain types of family, certain types of treatment, poor timing of treatment, depression, premorbid obesity, distorted body image, and premorbid behavior problems (Crisp et al., 1977; Steinhausen & Glanville, 1983; Jarmen et al., 1991; & Jeammet et al., 1991).

Steiner, Sanders and Ryst (1995) explained precursors and risk factors of juvenile eating disorders by incorporating a developmental perspective. They attributed eating disorder onset to the result of many antecedents that build over the years, which are exacerbated by the stress of adolescence. Their model can be utilized in order to understand how the "stacking of factors" is implicated in the onset and maintenance of an eating disorder. They listed the factors as follows:

(1) biological factors such as gender, body mass index, fat distribution and temperament;

(2) family factors such as parenting, family attitudes towards body size and image;
(3) psychological problems such as separation anxiety, shyness, weak self concept, and anxiety; habits and behaviors such as early pica or voracious eating, fussy eating;
(4) social and cultural factors such as peer relationships, maturity for social engagement and cultural definitions of body image; and
(5) crises that occur such as those with family and friends;
(p. 432).

Strober (1984) supported the perspective that several factors need to be considered regarding the onset of an eating disorder. He examined stressful life events in the 18-month period prior to the onset of an eating disorder with a group of 25 female adolescents. He identified the following stressful life events: (1) rejection by peers, (2) arguments between and with parents, (3) serious parental or personal illness, (3) not having extracurricular activities, (4) father's absence from the home, (5) involvement in drugs, and, in the younger females, (6) menarche.

Variables specific to present research

According to Garner (1991), the sex and age of respondents vary along the eating disorder dimensions. The other dimensions of ethnic food in the diet, ethnic background, and residence included in this research project were not as often cited in the research. The rationale for including these independent variables in this research effort was to assess whether one's identification with their ethnic background and proportion of ethnic food in their diet is associated with eating behaviors and attitudes. Also, the question regarding residence was included to assess whether leaving one's family and community to attend school has an effect on diet and eating disorder risk. School of attendance was also queried. This variable was included not to assess it as a potential factor in disordered eating behaviors and attitudes but as a control for any differences between the school populations.

Age, Grade, and School

Age and grade were two variables investigated in this research; however, it was recognized that they overlap. Therefore, grade was primarily included in order to account for potential diversity of ages found in each grade. The rationale applied was that if significant findings were evident with these two variables, then recommendations regarding grade-based prevention efforts would likely have to be reflective of age diversity. The eating disorder literature cited regarding grade was similar: either it was exclusively investigated or paired with the age variable (Weaver & Blundell, 1990 & Gresko & Rosenvinge, 1998).

Similar reasoning was applied with the inclusion of the school variable. If significant differences existed between students in each of the schools, then prevention efforts would needed to reflect specific needs. Furthermore, if there were no apparent differences between the schools, one would be better able to generalize the findings to the Whitehorse youth that did not participate in this research project. When conducting a literature search, no eating disorder research was found in which school was identified as a relevant factor. However, in other disciplines, there are some researchers that have found that school size is relevant to cohesion among students (Udry and Bearman, 1998). Ensminger and Juan (1998) indicated that attachment bonds are greater in small schools and that they have been linked to lower instances of problem behaviors. Furthermore, Steinberg and Avenevoli (1998) suggested that an adolescent must be viewed in light of context as well as individual behaviors; from this perspective, the school and even the grade that a youth attends could be risk-prone and affect the individual youth.

There were mixed findings on whether or not the age of eating disorder onset is a factor in predicting a good prognosis. Ratnasuriya, Eisler, Szmukler, & Russell (1991) found that individuals whose onset occurred at a younger age had a better long-term prognosis. In contrast, Bryant-Waugh (1988) reported that prepubertal onset is often associated with a poor prognosis. Swift (1982) indicated that there is inconclusive research regarding prognoses for people younger than 15 years of age. He attributed this to methodological problems in research and to factors involved in the etiology of an eating disorder. He stated, “It is difficult to differentiate eating disorder concerns such as body image and maturity fears, from the similar developmental concerns of characteristic of young teens” (p. 42).

There are variations in reports regarding the age of onset of AN and BN. Garner (1991) reported that the age of onset in the majority of AN cases is either before or during puberty. Mitchell, Hatsukami, Pyle, Eckert and Soll (1987) indicated that the mid-teens are typical for age of onset in BN cases. However, in both AN and BN, there are exceptions to age of onset, so that cases are found in children and in middle-aged and elderly adults. Schmidt, Hodes, and Treasure (1992) submitted that persons with early-onset bulimia (<15 years of age) have a more negative prognosis. They also reported that in early-onset bulimia cases, there are additional complicating factors such as psychopathology, self-destructiveness, and inadequate parental control. Story, Rosenwinkel, Himes, Resnick, Harris & Blum (1991) examined disordered eating behaviors and attitudes and found that the frequency and severity of chronic dieting and unhealthy purgative measures is higher in girls in the middle- to late-teen age group than with younger girls.

Fichter and Quadflieg (1995), who investigated eating disorders in the general adolescent population, suggested that the timing of puberty is a factor to consider with an eating disorder or another psychological problem. Brooks-Gunn (1988) contended that late maturation in girls and early maturation in boys might be viewed as protective factors against depressed affect. In addition, it appears that the maturation process itself has an impact on self-esteem and image, especially for girls. Rosenbaum (1993) found a decrease in positive feelings about oneself in females as they progress from ages 8 to 15.

Overall, it appears that adolescents are more at risk for eating disorder concerns than adults or young children. One can extrapolate from the research results regarding age of onset and suggest that there is greater risk of anorexia in the early teens and of bulimia in the middle to late teens. The timing of puberty and adolescence is noted as a potential factor in the presence of psychological concerns and eating disorders.

Gender

There is little doubt that eating disorders occur more frequently in females than in males and that females are considered more at risk for developing eating disorders. In the *DSM-IV*, the American Psychiatric Association (1994) reported that between 0.5% and 1.1% of individuals that meet the full criteria for AN and 1.0 to 3.0% of individuals meet the full criteria for BN. They indicated that males present with eating disorders in 0.1% of the cases. Researchers of eating disorders in adolescents reported similar differences between gender prevalence; however, they also indicated that there are increasing numbers of boys who exhibit disordered eating behaviors and attitudes such as binge-eating. Yanovski, Nelson, Dubbert, and Spitzer (1993) and Ross and Ivis (1999) indicated that BED occurs with comparable frequency in both males and females. Prevalence rates for BN are calculated at 1.1% in girls and 0.2% in boys (Flament, Ledoux, Jeammet, Choquet & Simon, 1995 & Garfinkel, Lin, Goering, Spegg, Goldbloom, Kennedy, Kaplan, & Woodside, 1995).

Some researchers attributed the differences in prevalence between males and females to the effects of society on each gender; while others focussed on the impact of biological changes that the youth, in particular the female youth, undergo in puberty and throughout adolescence. Steinhausen (1995) proposed that, "The biology of being female confers a more important risk than societal expectations in terms of gender-related roles" (p. foreword, xi). For example, the female biological changes such as increased fat deposition might lead to body dissatisfaction and unhealthy weight-reduction practices.

Sours (1980) attributed the interaction of biology and society to the differences found in prevalence of eating disorders in males and females. Herzog (1992) articulated this position, "Girls are becoming sexually mature at younger ages due to ample nutritional resources and yet have not developed the psychological resources to deal with a society that is sexualized and narcissistic about the body" (p.55). Brooks-Gunn (1988) also voiced this concern with regard to early-maturing girls who are noted as being more at risk for eating disorders and other psychological problems.

Hsu (1990) suggested that the reason there is a difference in frequency of eating disorders found in males and females is that males have less body dissatisfaction. In separate studies, Davies & Furnham (1986) and Eisele, Herstgaard & Light (1986) found that 40 to 80% of high school girls experience body dissatisfaction. Male body dissatisfaction has seldom been measured but is considered to be much lower, at 10 to 20% (Garner, 1991).

Anderson (1992), who has studied eating disorders in males extensively, proposed two sociocultural explanations to account for a lower prevalence of eating disorders in males. First, he contended that the process of transition from childhood to adulthood is harder on females than it is on males in Western society. The second explanation follows from the first, that society does not expect boys or men to be thin. However, Anderson also noted that researchers have found that when males are placed in situations in which weight loss is required---such as the situations of many swimmers, runners, and horse jockeys---there is a substantial increase in eating-disorder behaviors (Yates, Leehey, & Shisslak, 1983; King & Mezey, 1987; & Steen, Oppliger, & Brownell, 1988). A potential explanation for these findings is that the reinforcement of competing in a sport is a critical factor in occurrences of eating disorders in males. To support this premise, there are similar findings reported with respect to females in sports and dance that require a thin body shape (Garner, 1991; Brooks-Gunn, Burrow & Warren & Rousen & Hough, 1988).

Anderson (1988 & 1990) indicated that the profiles of males and females in eating disorders are similar. He added that males might be underdiagnosed because they do not fit the amenorrhea criterion. Apparently, the male correlate of amenorrhea is the experience of low energy and low sexual interest. Hsu (1990) reported that males with eating disorders are usually found in three age groups: prepubertal, adolescent, and adult. Furthermore, he found that the younger males tend to have a premorbid history of obesity. In contrast, Anderson (1988) reported that females who develop eating disorders feel fat before they begin dieting. He discovered that only 10 to 12% of the females were above average weight before dieting, whereas the majority of males were medically overweight.

In a recent article in the *Edmonton Journal* (April 2000), a young man described his struggle with an eating disorder. His depiction of the history of his eating disorder was similar to the females' qualitative descriptions found by Tessier (1993). He indicated that his eating disorder began in the context of strict dieting for a sport. He added that he became addicted to the control he felt over food and his body. He acknowledged that his family was troubled throughout his childhood. His primary complaint was that he had not yet been able to find sufficient treatment. It was his understanding that this was because his condition was unrecognized as an eating disorder in the early years. He stated that many practitioners and physicians did not consider an eating disorder as a diagnosis for him because it is primarily considered a female disorder. He added that the current problem he faces is finding appropriate psychotherapy.

It appears that although the prevalence for eating disorders is much higher for females than it is for males, the experiences and profiles of each are similar. Biological and sociocultural factors are implicated in the onset of an eating disorder for both males and females. However, the adolescent female is still considered at a greater risk for an eating disorder than is an adolescent male.

Ethnic Diet

The variable "ethnic diet" was investigated in this research project in order to determine the impact of diet on the eating behaviors and attitudes of Whitehorse students. Given the range of ethnic groups that live in the Whitehorse area, one is able to examine this variable. The Aboriginal ethnic diet is particularly interesting in this study because Aboriginal people represent a significant proportion of the Whitehorse population. In addition, their diet is representative of depictions of the Northern Canadian lifestyle: hunting and fishing and being closely associated with the land. There are two aspects of the variable "ethnic food in the diet" to consider. One is that ethnic diet is representative of greater familial and cultural identification and belonging; and the other is that it is associated with more opportunities for nutritionally sound meals.

In reviewing the eating-disorder literature, this researcher found no studies regarding ethnic diet. Nevertheless, it was evident that there is some interest in particular types of diets starting to surface. For example, Critser (2000) and Young (1999) explored the phenomenon of "fast foods." In addition, there has been a great deal of research regarding the prevalence of dieting in eating disorder occurrences and impact of dieting on eating disorder occurrences (Story et al, 1991; Agras & Kirkley, 1986; Attie & Brooks-Gunn, 1989; Striegel-Moore, Silberstein, Frensch, & Rodin, 1989; Pyle, Mitchell, & Eckart, 1981; Stice, Mazotti, Krebs & Martin, 1998 & French, Story, Downes, Resnick & Blum, 1995).

Generally, we define a "diet" as a special and/or restricted type and amount of food we eat for reasons such as ill health or obesity. Dieting is widespread and has been recognized as a potential precursor to an eating disorder (Anderson, 1988). Therefore, it is encouraging to know that there are efforts aimed at better understanding the effects of dieting.

"Diet" is also defined as the food and drink a person customarily nourishes oneself with. It is curious that eating disorder researchers have not investigated "diet" or "ethnic diet" from this perspective, especially given recent interest in resiliency and identification of protective factors (Jessor, 1998). In this review of literature, this researcher drew from sources in which the relationship between one's diet and physical and psychological health was discussed. In addition, the nutritional habits of Aboriginal and Non-Aboriginal Yukoners are documented.

Visser (1991) authored a book called the *Rituals of Dinner* in which she explored the origins, eccentricities, and meaning of dining by drawing on historical and sociocultural accounts. Throughout her book, she stressed the importance of food to one's social and cultural identification. She contended that one's diet is essentially learned in the bosom of one's family and community and represents one's ethnic identification and sense of belonging. She stated, "The language one first learns to speak, and the food one is accustomed to eat in childhood, are two of the most fundamental preservers of an adult's social and racial identity" (p.42).

Visser also described food as our "ritual relaxation" that we share with the groups to which we belong. Essentially, she proposed that the sharing of food is the foundation of civilized behavior that bonds individuals, families, villages and tribes together. To emphasize this point, she indicates that the Latin definition for "'companion" is "breaking bread together." She captured the essence of her thesis with the following comment, "It is not so much what is one the table as what is on the chairs" (p.262). To corroborate Visser's logic, Covey is cited (1997) on this topic. "The dinner table gives you the perfect opportunity to create a renewing tradition because of the food. As one of our daughters said, 'It seems as though many important traditions are surrounded by food, food, food. Food is the key. Everyone loves good food'" (p.282).

However, beyond the potential benefits of one's social and psychological ties that are possible owing to family meals are the nutritional benefits. It is interesting to note that in the Yukon youth rated their health and nutritional knowledge less positively than do adults and older people. This is opposite to the pattern reported by citizens in the rest of Canada (Yukon Bureau of Statistics, 1994). As a result, one might predict that Yukon youth would benefit from meals their parents provide. As well, more Yukon females than males rated their health as excellent (Yukon Bureau of Statistics, 1994). This suggests that the youth, in particular male youth, are more likely than female youth to have problems with health as a result of the nutritional habits.

Guthrie (1979) outlined the factors involved in one's selection of a diet. She stated that youngsters who are concerned about their health, are emotionally stable, and come from homes characterized by good relationships chose better foods than youth motivated by considerations of group status, sociability, independence from parental control, or enjoyment of food. She also added that the more meals a youth eats away from home, the less likely he or she is to consume meals of adequate nutritional content. She attributed poor eating habits to skipped meals, lack of time or companionship for regular meals, rebellion against parental influence, lack of supervision in the selection of meals eaten away from home, and fear of obesity. In the Yukon, people spent 2.2% of their income on restaurant dining, and 10.8% on food purchased from stores (Statistics Canada, 1998). Although these food expenditures were not compared to the rest of the Canadian population, one might surmise that there are a significant number of individuals that lack regularly home-cooked family meals in the Yukon. Extrapolating from Guthrie's (1979) explanation of food choices that youth make, this may be particularly problematic for youth.

Dacks (1981) voiced concerns about Aboriginal eating practices. He stated that Aboriginal people that move away from their reserve or the community that they grew up in are found to be more prone to diabetes and obesity. He also indicated that native nutrition is often deficient when they substitute traditional food for sugared food products.

Wein and Wein (1995) described the positive aspects of the Aboriginal eating practices. They indicated that Aboriginal people still prefer traditional foods over marketed alternatives and that they strongly believe that the traditional foods are better for their health. Wein, Sabry and Evers (1989) described the Aboriginal diet preferences by referring to the results of the ratings made of 22 traditional and marketed foods: the preferred foods are moose, bannock, caribou, orange juice, duck, carrots, and apples. According to their study, wild game and fish are still prepared by traditional methods of boiling, frying, or preserving in the form of drying meat and fish. They also reported that in communities in which there are larger proportions of First Nations people, such as Old Crow, Yukon, 76% of daily protein intake is based on traditional foods. In contrast to the Yukon Bureau of Statistics (1994) findings regarding youth's lower ratings for health and nutritional knowledge, Wein and Freeman (1992) found that children's food preference ratings did not differ from adults for 31 of the 34 traditional foods. Although both studies focus on somewhat different measures, one may potentially conclude that traditional foods are important to the First Nations people and that First Nations youth share with adults their preferences for these foods. Given this conclusion, one might further reason that the Aboriginal youth that report greater proportions of ethnic food in their diets are more likely to consume nutritious meals.

In summary, while there are few accounts of investigation of ethnic diet in the eating disorder literature, there is some literature that can be applied to pose the argument that diet, in particular ethnic diet, is an important aspect of the psychological and physical health of youth. Furthermore, it is contended that the percentage of ethnic food in one's diet could be conceptualized as representative of the social and nutritional benefits of shared family meals and of the meals that are characteristic to one's ethnic background.

Ethnic Background

Garner (1991) indicated that most of the research on eating disorders has been conducted with Caucasian women. However, there is some research regarding the relationship between one's ethnic background and disordered eating behaviors and attitudes. In the following section, findings and explanations are presented regarding this relationship, with particular focus on Aboriginal people. As mentioned above, they represent a significant proportion of the Whitehorse population. As well, research outside the area of eating disorders is drawn upon in order to depict the potential impact of ethnic background on youth.

There are unsettled debates regarding the relationship of ethnic background and eating disorders. Some researchers have identified no differences between majority and minority groups on indices of eating disorders (Grange, Christy, Telch, & Agras, 1997). There is a plethora of inconclusive research regarding the relationship between one's ethnic background and one's weight and diet (Rosen, Silberg & Gross; Gowers & McMahon, 1989; & Rosen, Shaffer, Dumer, Cross, Deuman & Malberg, 1988). Nevertheless, when less serious disordered eating behaviors and attitudes are assessed, such as overeating, poor dietary choices, and unhealthy body image, more compelling results are noted between minority and majority groups (Garner, 1991). Snow & Harris (1989) contended that there is an increase in eating disorder symptoms as one's acculturation to Westernized society increases.

Relative to this concept of acculturation, Allison (1995) outlined problems that might develop when minority individuals conform to the majority population's "ideal body size" standards. First, such individuals may be prone to engage in dieting even though it is at odds with their ethnic and cultural values. Second, they may experience "anomie," which is defined as a lack of feeling that one belongs. Essentially, if one rejects one's ethnic/cultural standard of beauty, but is not yet accepted by the majority culture because they do not fit a standard of beauty, they are in "limbo" regarding body image.

There are few studies regarding eating disorders within Aboriginal ethnic groups. Rosen, Shafer, Dummer, Cross, Deuman, and Malmberg (1988) investigated the disordered eating behaviors and attitudes of Native American women. They reported that almost 12% of their sample used harmful weight control measures such as self-induced vomiting. In contrast, Geller (1996) documented minimal disordered eating behaviors and attitudes among 79 Canadian Native women between the ages of 17 to 50. Le Blanc (1995) contended that the decline of the traditional Native American culture could result in an increase in the incidence of eating disorders. To test this hypothesis, she administered questionnaires intended to measure eating disorders, acculturation level, and spirituality to 203 Native American women from 17 to 70 years of age. She found some weight problems and eating disorder symptoms, but was unable to establish a relationship between the variables of level of acculturation, spirituality, and eating disorders.

In examining associations between ethnic background and disordered eating behaviors and attitudes, there is a need to consider the inherent cultural and psychological impact of one's heritage. Thus, it is helpful to heed research efforts outside the area of eating disorders.

Rotherman-Borus & Wyche (1994) studied ethnic differences in the development of identity. They found that ethnicity is a factor in one's exploration of identity and that the developmental challenge of ethnic minority adolescents is that they must adopt a stance toward their own ethnicity. Atkinson, Morten, and Sue (1993) and Markstrom Adams and Spencer (1994) developed a model intended to portray the stages of development that minority youth experience. The stages involve conformity, dissonance, resistance and immersion, introspection, and synergetic articulation and awareness. Basically, the stages are as follows: (1) self-deprecation and group-deprecation of one's ethnic group, (2) group appreciation of the dominant group, (3) rebellion against ethnocentrism and against the dominant group, and (4) acceptance of one's own group and of the dominant group.

In addition to the developmental challenges that minority youth must meet, there is also the impact of each individual's ethnic background, which could be depicted as either negative or positive. Wagner and Compass (1990) described the potential negative impact of ethnic background on the psychological and academic functioning of adolescent girls and boys from minority groups. They found that these youth do better if they are from ethnic families that do not follow or ascribe to traditional gender roles. Researchers such as Allison (1995) and Young (1999) suggest that a strong ethnic background identification is important. They found that individuals from minority groups who are more prone to disordered eating behaviors and attitudes are less identified with their own culture and more likely feel pressure to conform to majority groups' standards.

As stated above, there have been few eating disorder studies conducted with Aboriginal ethnic groups (Rosen et al, 1988; Geller, 1996 & Le Blanc, 1995). However, discussion of findings regarding Aboriginal people, in particular Northern Aboriginal people living in the Yukon, can be utilized to outline concerns that potentially parallel behaviors and attitudes characterized in eating disorders.

Dacks (1981) documented a variety of social ills that Northern Natives have suffered as a result of uncontrolled, profound, and rapid change. He listed alcohol abuse as a factor involved in family and other violence and reported that their health problems are far greater than those of other Canadians. Dacks also stated that suicide is becoming increasingly common, especially among younger native people. He reported that substantial numbers of native people suffer from psychological disorders that are suggestive of turmoil, anxiety, and frustration. He also indicated that there is a high drop-out rate for students. In one study, he found that of the 1139 native students in Yukon elementary and secondary schools, only 12 were in Grade 12. He contended that problems in the First Nations community are "…compounded because children experience the failure and powerlessness of their parents and come to expect it for themselves" (p.37).

Driedeger (1992) focused on both Aboriginal and Non-Aboriginal people of the North. He compared crime rates across Canada and reported that the Yukon and Northwest Territories have the highest cost per capita for policing: it is 4 to 5 times higher than the other provinces. He stated that when crime occurs within the Native community, another compounding factor is involved: Native families are becoming increasingly "matrifocal"; in other words, the male parent is often a temporary member of the family and children lack a two-parent family.

It appears that ethnic background can have either positive or negative impact on an individual. In terms of the development of identity and a sense of belonging, it is likely a protective factor. However, in terms of problems that some ethnic youth face or the value systems characterized in some ethnic groups regarding gender roles, ethnic background is potentially a negative factor. In this research, the objective was to identify what role ethnic background has in disordered eating behaviors and attitudes of the Whitehorse youth.

Residence

The variable residence was investigated in this research project in order to determine the eating behaviors and attitudes of students that must leave their home and community in order to attend school. In conducting a literature review of the eating disorder research, no references regarding residence were found. However, the impact of a youth's leaving home has been archived in a range of other research efforts and literature.

Jessor (1998) edited a book in which he and other contributors reviewed adolescent risk behavior. The focus of these researchers was the investigation of behaviors involved in a youth's well-being, health, and life course. Risk behaviors were described as inadequate social role performance, poor school progress, psychopathology, and health-compromising behaviors such as poor dietary practices or insufficient exercise (p.2). Jessor stated that protective factors also need to be considered. He stated that protective factors could be attributed to a youth's reduced likelihood of engaging in risky behaviors and reduced adverse outcomes of having engaged in them. In addition, he suggested that protective factors are potential moderators or buffers against exposure to risk factors or actual involvement in risk factors.

This researcher adopts Jesser's stance and presents literature regarding the possible risk factors of leaving family and community as well as literature regarding the likely protective role of family and community against dysfunctional eating behaviors and attitudes. There is review of instances in which youth have been separated from their families, in particular Aboriginal adults that attended residential schools as children and modern youth that attend boarding schools. In addition, there is discussion of the importance of family and community for a youth's psychological and physical health.

The legacy of the effects of residential schools on children can be referred to as a bitter example of the impact of leaving family and community to attend school. Coates (1991) provided an account of the Carcross Indian Residential School in the Yukon. He stated that this school was developed in 1911 for two reasons: First, day school programs were considered unsuccessful because of the nomadic nature of the First Nations people; second, the educators viewed residential schools as the best means of effecting a scholastic and cultural transformation of Native students.

Coates (1991) listed the problems that occurred at the Carcross school. Children were compelled to live away from home for as long as ten years because the school and government would not authorize summer vacation travel to distant places. Thus, students had difficulty maintaining contact with their parents. In the 1920s, there was a series of deaths among the student body and rumors about poor food and cramped quarters. As well, the school officials insisted on a strict, authoritarian code of discipline. They restricted socialization, interaction between the sexes within the school, and visits to the nearby Carcross community. Strapping and shaving the head were often used as disciplinary measures. Coates summarized that the most damaging results were separation from parents and community and an impractical education: Essentially, these youth were isolated them from their Native culture, and their schooling left them unable to cope with demands of either the native or non-native society. King (1967) indicated that many of those residential school students are now parents and grandparents and have suffered long-term serious crises, particularly regarding their personal and cultural identities.

The example that Coates (1991) provided is a worst-case scenario of the effects of the separation of children from their families. In contrast, Harris (1997) provided examples of British children who leave their home to attend boarding school. For these children, there are fewer instances of dysfunctional behavior and emotional repercussions. She attributed this difference to the consistency of culture and lifestyle the youth experience at home and school. However, there are examples in the North of the problems modern youth face when living away from one's family and community in order to attend school. Kleinfield (1994) described such a situation in Alaska, where policymakers face the dilemma of providing either small schools to rural students or having the rural students relocate to larger centres for their education.

> Should high school students attend boarding schools that are large enough to provide a variety of classes and activities? Or should rural students attend high school at home, even though these small schools do not look like a "real high school." In Alaska, as in other northern regions, the policy dilemma is intensified because most small rural communities have indigenous populations. Cultural survival and equity issues enter the debate that is not only about the quality of small high school versus a boarding school education." (p. 70)

Kleinfield (1994) indicated that the current Alaskan compromise for this dilemma is to provide rural high school students with a boarding school option. According to the Alaska Department of Education (1993) 82% of rural high school students attended the small high schools, 15% selected a boarding school, and 3% enrolled in correspondence courses. Alaska had over 200 schools with enrollment of fewer than 100 students.

Kleinfied (1994) followed the outcome of boarding school students in Alaska. He reported that there is a high dropout rate for students who were sent away to boarding school, as well as high rates of social and emotional problems. In 1973, he published a study in which he described the dismal outcomes of 105 village students who had entered boarding school programs as ninth graders. He indicated that by the end of their sophomore year, 55% had dropped out of school and 70% of the students who had no history of previous difficulties were referred for the mental health care of social and emotional problems. These problems ranged from serious homesickness to difficulties with alcohol and violations of the law. Academic gains were assessed at an average gain of zero on standardized achievement tests. As well, rates of college success were low.

Some explanation for the dismal consequences of boarding school education might be understood in light of theory and research regarding early role transitions and social bonds. Hogan and Astone (1986) contended that early role transitions are involved in later adult outcomes. To understand early role transitions and other factors, Ensminger and Juon (1998) investigated the processes that are noted for the enhancement or inhibition of growth and development. They followed a cohort of adults since their first grade in a poor urban neighborhood in Chicago. Their overall aim was the identification of the pathways from childhood through adolescence and young adulthood to drug use, crime, other problem behaviors, as well as the pathways to successful transitions such as employment and marriage. Their research is relevant to this study of eating disorders because they investigate the impact of social bonds in adolescence on later behavior patterns. Ensminger and Juan found that adolescent social bonds such as attachment to school and parental supervision are important for healthy development. Both males and females that lacked these ended up with high problem behaviors as adults. They also found that males who leave home before the age of 16 were more likely to exhibit adult problem behaviors. Marini's (1987) thesis that the acquisition and time of entry into adult social roles are key developmental life events involved in the outcomes in adulthood is one possible explanation for difficulties youth face if they leave home to attend school.

In order to endorse the viewpoint that family and community are important to the healthy development of youth, I reviewed literature in which the writers support this philosophy. Covey (1997) has authored several books regarding healthy habits. He proposed that because our society has changed dramatically over the past 40 years, parents and families must be even more proactive in providing emotional and cultural guidance. He stated that the changes are pervasive and evident in reduced family time and interactions. He noted that even the changes in school problems are significant: "In the 1950s it was gum, noise, dress code, littering and running in the halls, in the 90s it is drugs, alcohol, pregnancy, suicide, rape, robbery and assault" (p.56). Covey (1997) also cited conclusions from a recent survey in order to depict problems within family relationships: "Only half of our teenagers eat dinner on a regular basis with their parents. Ninety-eight percent of female high school students who live with their birth parents go on to college. Teenagers who don't have dinner with their families are 4 times as likely to have premarital sex" (p.285). He went on to contend that family and parents can "make a difference" around the dinner table. He concluded, "In all treatises on parenting, in all the psychological studies on child development, and in all the data on self-esteem, this humble key of dining together when rearing children is overlooked" (p.282).

Beyond the importance of the family is the importance of community in a child's physical and psychological health. This is especially relevant if youth feel supported by community members and identify with community members. Ranhawa (1992) depicted a reciprocal relationship between communities and schools. He indicated that rural communities suffer from school closures because social and cultural ties of a community are weakened. Essentially, he suggested that as the community loses its traditions and social identity, so the youth lose that connection when they must leave to attend schools in larger centres. In the following paragraphs, I discuss literature regarding the meaning of community for its members.

The study completed by Dias and Gingrich (1992) in which they surveyed farm families in four rural Saskatchewan communities is useful to review here as an example of the community experience in rural areas. They found networks of solidarity, community participation, and helping patterns that were restricted to kinship. They attributed these findings to the fact that these people share relative isolation, similarity of experience, and physical closeness.

This researcher contends that this "networking" situation is characteristic of the North and particularly notable among First Nations people. For example, helping patterns are identified among aboriginal people that live in both urban and reserve settings and have also been noted as being restricted to relatives and friends (Dosman, 1972; Nagler, 1970 & Ablon, 1964). West (1995) argued that no matter what ethnic group is involved, all people living in the North deal with limits to growth, movement, and achievement. He stated, "The conditions of the North are unforgiving, they make us dependent on one's fellows, cooperative skills, and communal capital" (p. 110).

The *Yukon Health Promotion Survey* (1993) was conducted to examine how Yukon residents perceive and promote their own health. Some of the findings are interesting to draw upon to illustrate Yukoners' perception of community, family, and health. A total of 1,313 households in Whitehorse and several other Yukon communities were targeted for this survey. The most notable finding is that community was important to most Yukoners. They acknowledged interrelationships between sense of community, quality of life, and self-rated health. Ninety-two percent of the Yukoners that reported excellent quality of life also reported a sense of community. This trend was also identified in relationships between health and community; essentially, better health was reported when individuals also experienced a greater sense of community. Community attachment was equal for all age groups, although 31% of people between the ages of 15 to 24 reported feelings of being isolated and alone. Over 60% of Yukoners rated the health of their community as excellent; however, they rated their family health as much higher than that of their community. Only 8% of the households rated their family health as poor or fair.

Conclusions to be gathered from this survey are that Yukoners perceived community as a healthy and important aspect of their lives. However, as with the Saskatchewan farm communities' kinship helping patterns, Yukoners identifed primarily with their families. Extrapolating from these findings and conclusions, one might predict that leaving the support and the community has a negative impact on one's health and quality of life.

In summation, community and family are considered important aspects in one's real and perceived physical, social, and emotional health. This is apparent in the disturbing examples of children who were separated from family and community as well as in the examples of how community and family are protective and supportive factors in one's well-being. Examining the "residence" variable in the context this research project may shed some light on the impact of moving away from home and community to attend school and occurrences of disordered eating behaviors and attitudes.

Rural versus urban setting

In addition to demographic variables researched, the disordered eating behaviors and attitudes of Whitehorse youth were compared to those of the youth living in larger and more centralized communities in southern Ontario and northeastern United States. The following literature was primarily drawn from research regarding differences between rural and urban communities.

At present, there are inconclusive findings regarding eating disorder occurrences in rural and urban settings. Some researchers have suggested that occurrence of eating disorders is less frequent in smaller communities. In separate studies, De Azevedo and Ferreira (1992) and Hoek (1991) found low rates of diagnoses of bulimia in adolescents living in rural settings. Hoek indicated that the prevalence rate for BN is 3 times higher in the city. In contrast, some researchers have identified no differences in rates of eating disorders in urban and rural settings (Story, Rosenwinkel, Himes, Resnick, Harris & Blum, 1991& Rather & Messier, 1993).

Hoek, Bartends, Bosveld, van der Graff, Limpens, Maiwald, and Spaaj (1995) evaluated the impact of urbanization, age, and sex differences on the incidence rate of AN and BN among patients (N=151, 781). They discovered that occurrences of BN are lowest in rural areas, intermediate in urbanized areas, and highest in large cities: 6.6, 19.9, and 13.9, respectively, for per 100,000 females per year. However, they detected no rural-urban differences in the occurrences of AN. They concluded that urbanization appears to be a risk factor for BN but not for AN.

When disordered eating behaviors and attitudes are examined, as opposed to actual eating disorders, rural youth appear to have more problems. Miller, Verhegge, & Pumariega (1999) tested their hypothesis that there is a greater risk for eating disorders in rural areas than is generally expected by administering the EAT-26 to 1,302 males and female adolescents in rural Appalachia. According to their results, 19.8% of females and 3.7% of males in this rural area were considered at high risk for development of an eating disorder. Sjostedt, Schumaker, & Nathawat (1998) investigated disordered eating behaviors and attitudes in urban and rural settings with the Australian Indian population. They found no differences between the urban and rural Indians regarding a fear of fat but noted that the rural Indians had higher eating disorder scores on the EAT-26 than did the urban Indians.

Overall, there were mixed findings concerning the rates of urban and rural adolescents with eating disorders and/or disordered eating behaviors and attitudes. There is a prevailing attitude that the rates are higher in the cities because of the greater accessibility to sociocultural influences on body image.

Zapf (1991) attributed inconsistent results regarding urban versus rural prevalence rates to the term "rural." He stated that it is "confusing, imprecise and lacks universally accepted definition" (p.36). He charged that there is an incredible range of rural population rates documented: from 2,500 to 50,000 persons. Zapf also contended that rural areas in the North are different than those of the South because one must also consider the remoteness of the setting. This distinction appears to be clear when one notes the differences in the crime rates of southern Canadian rural communities and the rural communities in the North. The size and setting of Whitehorse might be considered important components in the investigation of differences between rural and urban youth. Some of the problems faced by Northerners are documented below.

Shissel (1992) reported that male youth in Northern rural areas are victimized more often than male youth in other rural areas. He also indicated that rural property and violence crime rates are 8 to 10 times higher in rural Northwest Territories and the Yukon than in other rural areas of Canada. He attributed crime rate differences to the extra stress that rural communities face in the North. "A village of 3,000 in southern Ontario may actually have fewer local services than a community of the same size in northern Ontario. Residents of the southern community can access larger towns and cities with short to moderate car trips. However residents of a remote resource town must exert considerable time and effort if they want to use the services or opportunities of communities other than their own" (p.80).

There is no research regarding eating disorders in the Yukon or elsewhere in the Canadian North; therefore, cited studies regarding urban and rural differences in eating disorders are cited. In addition, other problems that Whitehorse youth might encounter such as crime rate and remoteness are referred to. These problems are the bittersweet aspects of smaller communities in the North. However, it would appear that living in a small centre such as Whitehorse is also positive. The "positives" earlier referred to were a greater sense of community, less technological impact, and greater independence (Ranhawa, 1992).

Prevention programs for eating disorders

The following review of eating disorder prevention and intervention approaches was included because of the perspective taken in this research: Ideally, prevalence findings are followed by program implementation. In this section, the advantages and disadvantages of prevention programs identified in the research are considered. Furthermore, there is a description of the relationship between media and eating disorders, especially with respect to how "media literacy" can be facilitated if it is based on the understanding of a child's developmental stages. A key recommendation voiced in this section is that eating disorder prevention programs can be designed according to the needs of the groups of students in question. In the final chapter, there is discussion how aspects of these eating disorder prevention and intervention approaches might be achieved in the Yukon.

McKenzie and Smeltzer (1997) described primary prevention as the effort made to reduce the incidence of a disorder in individuals who have not yet developed clinically significant symptoms. They also indicated that the objectives commonly adopted by prevention programmers is the elimination of factors involved in a disorder and the introduction of protective factors in order to counterbalance the impact of identified risk factors. Thus far, the majority of eating disorder prevention programs have been aimed at developing resistance against an eating disorder in school-aged girls.

Striegel-Moore and Steiner-Adair (1998) authored a chapter on the primary prevention of eating disorders in which they discussed the advantages and disadvantages of prevention programs. They stated that a clear advantage of prevention is that early intervention is the strongest predictor of recovery (Ratnasuriya, Eisler, Szmukler, Russell, 1991). They identified one disadvantage of the prevention programs: that minimal results have been found. They submitted that these prevention efforts have failed for several reasons. The first explanation they proposed is that programmers have neglected the social context in which messages such as "you cannot be too rich or too thin" are disseminated (p. 13). They also attributed failures to the fact that entire classes of risk factors are not dealt with in prevention programs. Specifically, they voiced the concern that there is a lack of awareness that "disordered eating may be used as a coping mechanism in response to a wide range of difficulties and stresses" (p.13).

Other researchers have articulated similar concerns regarding underlying psychological meaning and motivation involved in disordered eating behaviors and attitudes. For instance, Kolodny (1990) described an eating disorder as a "red flag" that there are other problems that simultaneously need to be addressed. Furthermore, in this researcher's clinical practice, clients have reported that once they had lost the coping strategy of disordered eating and dieting, they were unsure about what other coping methods to use in the face of uncomfortable emotions or stress (Personal communications). It follows then that a primary directive in prevention efforts should be to ensure that the individuals, families, communities, and cultures develop alternate and healthy coping strategies. Extrapolating from the concerns voiced here, it is apparent that school prevention efforts are likely to be more successful if cultural changes precede school changes. In other, changes in attitudes in the community are essential to changes successfully occurring in the school.

In the following paragraphs, there is description of some prevention programs. These were included here to provide direction and choice in prevention program development. As stated previously, it was contended that when significant concerns and/or risk and protective factors are identified in prevalence research, then effective prevention programs could be utilized and developed based on the findings of the research.

Gresko and Rosenvinge (1998) developed and evaluated a school-based prevention program in two Norwegian semi-rural communities. This first involved administering questionnaires in order to identify concerns that might be addressed in a prevention program. They then considered prevention program approaches, essentially whether to adopt a risk prevention or health promotion curriculum. They chose a health promotion focus in order to avoid the negative effects of the interest people have shown for a popular illness such as an eating disorder. From this perspective, they stated that prevention efforts are most successful when school and health authorities work together to teach children and adolescents about eating, nutrition, and developmental changes. In addition, they indicated that it is important to alert youth to media influences and messages that affect self-esteem. They developed an educational package in which they included general information about eating disorders such as the somatic and psychological consequences of eating disorders and dieting as well as topics regarding sociocultural influences, puberty, and "what to do if you suspect an eating disorder." As well, they developed a video called *This is My Life,* in which the above topics were incorporated. On this video, there were interviews with both boys and girls, and a young girl was followed as she developed an eating disorder.

Minimal long-term differences in eating behaviors and attitudes have been identified by some of the prevention program efforts. This is evident in the research conducted by Morena and Thelen (1993). They asked eighty 12-14-year-old girls to view a short video and participate in a discussion about eating disorders. Subsequently, when they measured the girls' knowledge, eating attitudes, and behavioral changes two days later they found significant changes. However, they failed to get similar results in later testing. In other research, similar disappointing results were identified. Paxton (1993) provided structured classes about the eating disorder issues of emotional eating, biological and cultural factors, and weight regulation. Twelve months after these classes, he detected no changes in the participants' eating or weight control behavior. Furthermore, he found no changes with measures of their body dissatisfaction and drive for thinness. Rosen (1989) conducted a study involving a control and an intervention group. The participants received eight sessions in which the topics of decreasing weight-reduction behavior and improving body image were discussed. With later analysis, he found no differences in the weight-control behavior between the control and intervention groups.

Stewart (1998) asserted that effective primary prevention of eating disorders is constrained by our limited knowledge of risk factors, especially as they pertain to development stages. She proposed that the principal challenges involved with the development of effective programs are to identify risk factors and to ensure the material is developmentally appropriate. With this viewpoint in mind, Stewart developed a prevention program that was delivered to 459 girls in three schools. It was formed based on the following considerations: There is a relevant curriculum, there is inclusion of active components to the lessons, and there is age-appropriate delivery. She determined that an ideal age is about 13 to14 because eating disorder issues are most relevant to girls at that age. She also believed that at that age the girls would have reached the developmental level in which they could cognitively and behaviorally make changes. In addition, in this age group, eating disorder concerns might be addressed before they are entrenched at a later age. Stewart incorporated topics regarding developmental challenges of adolescence such as changes in body shape, becoming independent, developing relationships, pressures in school, and developing an identity. She has not yet published her results; however, she likely foundmore compelling results than other prevention program researchers have found because she integrated important developmental concerns into the program.

Stewart (1998) and Smolak Levine, and Schermer (1998) concurred that prevention is best provided at the early teen or elementary level. Smolak et al (1998) asserted that a child might be more receptive to intervention at an early age, especially with regard to his or her thinness schema. They developed a program of ten lessons designed for a fourth grade curriculum which is called, *Eating Smart, Eating for Me*. In these lessons, there was emphasis on the topics: healthy eating, healthy exercising, and awareness of prejudice concerning body fat and overweight people. They reported that they found an effect on children's knowledge but not on their dieting, teasing, eating, or exercising. Despite minimal reported effects, they recommended further attempts at early intervention because of the findings regarding elementary students: Researchers have found body image, dieting, and weight/shape concerns for these youngsters. (Shisslak et al, 1998 & 1999; Smolak and Levine, 1994b; Maloney et al, 1989, Gustafson, Larson & Terry, 1992; & Childress et al, 1993). Many of these researchers discovered that 30 to 40% of elementary school girls have tried to diet and reported having weight concerns.

Media awareness is viewed as another important component of prevention programs. Levine and Smolak (1998) reported that a vast majority of adolescents (especially girls) read fashion and self-improvement magazines. They referred to the huge media influence on teens, "*Seventeen* magazine currently claims a total readership of 11, 000,000. And in a typical American household, the television is on for more than seven hours per day" (p.27). They contended that the media brainwashes their audience into beliefs about beauty, dieting, indulgence, and success. They claimed that women are objectified and slimness is glorified. Whether or not people are actually "brainwashed," one must admit that media provokes within the individual the opportunity to attend to, interpret, and assimilate body image messages. One might also admit that a youth, who has far less living experience, may not be as adept at interpreting media messages. To address the potential overwhelming influences of mass media, media-analysis and media-resistance lessons are often part of school-based prevention programs. They have been applied most successfully for smoking but have also been developed for eating disorders and HIV (Kaufman, Jason, Sawlski, & Halpert, 1994; Altman; 1990 & Murray, Prokhorov, & Harty).

Levine and Smolak (1996) reviewed 10 controlled studies and concluded that exposure to media images does not have an immediate negative effect on adolescents or young women but a potentially long-term one. Coolican (1999) completed research in which she examined the effects of television programs on a normal sample of women. They were presented with the programs *Baywatch* and *The X Files* and then given questionnaires to complete about their eating disorder behaviors and attitudes (EAT-26) as well as other questionnaires intended to measure self-esteem and other related psychological constructs. She found no relationship between the participants' scores and the program they viewed. She concluded that there is less influence on body image in shows such as *Baywatch* than initially hypothesized. However, there is also contrary and convincing research in which the rise in the incidence of AN and BN in young females is attributed to body image messages characterized in television and fashion magazines (Gordon, 1990; Levine and Smolak, 1996; & Stice, 1994).

Martin and Kennedy (1993, 1994) explained the effect of media on young girls. They studied what girls between the ages of 8 and 18 think about themselves while reading fashion magazines. They discovered that for the majority of girls, "There is a process of social comparison involving how pretty the models are and then feeling badly about one's own appearance"(cited in Levine & Smolak, 1998, p.29). They contended that early adolescence is a time in which boys and girls are developing self image and thus have inherent body consciousness. As a result, boys and girls demonstrated increased motivation to use media as a source of comparison. They further proposed that this motivation likely renders them more susceptible to anxieties about their own size, which in turn can lead to disordered eating behaviors and attitudes.

Levine and Smolak (1998) suggested that there are two ways to understand the relationship between the cause of an eating disorder and media messages. The first way to understand the link is called the dual-pathway model, which was developed by Stice (1994). They explained that "Unhealthy messages in the media are reinforced by family and peers, especially when the individual has a low self-esteem, a disorganized self-concept and a perception of being overweight" (p.32). The second model regarding the link between media and eating disorders is the developmental-transitions model. Essentially, in this model, mass media was viewed as an influential factor involved in the transmission of messages regarding body size. Furthermore, it was considered possible that there is an interaction of these messages with the developmental changes the adolescent goes through. The following example better illuminates their reasoning:

> Exposure to television programs and commercials could possibly contribute directly to a ten-year-old girl's schematic beliefs that "fat is very bad." Later, fashion magazines might directly trigger a 12-year-old girl's reevaluation of the importance of attractiveness-as-slenderness in the definition of femininity. Or mass media might contribute more indirectly by serving as a socially approved source of knowledge ("There are diets that really work!") and inspiration ("You can use this exercise machine to transform yourself into a winner with a flat abdomen!") for an already weight-conscious 13-year-old girl as she struggles to make sense of pubertal weight gain and a budding interest in boys (p.33)

Berel and Irving (1996) referred to Austin and Johnson (1996) for an example of how the integration of concepts from developmental psychology, social learning, and media literacy in prevention programs can be applied at both home and school. They developed a Message Interpretation Process model to explain the two pathways through which concrete operational children (ages 7 to 11) internalize televised messages. The first path is a series of questions such as "Is this realistic, am I or are my experiences similar to that person?" The second pathway, which is more of an emotional reaction to the message, is "Do I want to act or be like that person (identify)?" Essentially, Berel and Irving (1996) suggested that parents and teachers can teach their children the understanding of persuasive content in shows and commercials with questions like, "Do real women look like models in advertising?" and by talking back to the television (Levine and Smolak, 1998, p.41).

A significant portion of this prevention program review was focused on explaining the effects of media. This is in part due to the awareness that media is an important influence in most people's lives, whether they live in an isolated community of the North or in a teeming metropolis of southern Canada. Another approach that might be important, especially for isolated communities, is that prevention programs that can be provided in a distant-education format.

Celio, Winzelberg, Wilfrey, Herald, Springer, Dev & Taylor (2000) compare an internet program and a classroom-delivered psychoeducational program designed for the reduction of risk factors for eating disorders in college women. In both programs, many of the topics discussed above were included, such as body image dissatisfaction, excessive weight concerns, dieting or restrained eating patterns, and exercise and nutrition. Media awareness was also encouraged: The participants were asked to observe real women in public and compare them to women seen in fashion magazines. At the conclusion of both programs, Celio and his colleagues found significant effects in terms of reduced risk factors for eating disorders in the internet-delivered intervention. Although this research was based on adults, and thus does not incorporate developmental challenges, it was interesting to consider the results because of the widespread use of computers in schools. It is highly conceivable that an internet-delivered prevention program could also be introduced and successfully applied to concerns regarding eating disorders in adolescents. Such a program might be extremely valuable for isolated communities where available teachers, professionals, and numbers of participants are limited.

Conclusions regarding the efficacy of eating disorder prevention programs are mixed. Some researchers suggest greater success with the programs are possible when attention is given to developmental challenges, media, and sociocultural effects as well as the risk and protective factors relevant to eating disorders. Most of the prevention programs reviewed are school based; however, one internet-delivered program was also reviewed. Ideally, the most effective components of the existing eating disorder prevention programs might be applied to prevention and intervention efforts considered for youth in the Yukon.

Conclusion of the Literature Review

In this review of the literature, current and past understanding of eating disorders from psychological, sociocultural, and biological perspectives were discussed. In addition, the literature and research relevant to the demographic variables of age, grade, gender, ethnic background and diet, and residence were reviewed. Finally, the differences in eating disorder occurrences found between youth in rural and urban settings were described.

Within the section of literature review regarding past and current understanding, clinical eating disorders and other eating problems were defined. In addition, there were a range of topics and approaches taken with eating disorders included. It was contended that disordered eating behaviors and attitudes, and the eating disorders themselves, are multidimensional and that biological, social, and psychological aspects need to be considered in identification, prevention, and treatment efforts. In addition, it was hoped that with this broad and diverse review, the reader had a variety of approaches and explanations to consider in addressing the eating behaviors and attitudes that were identified by this prevalence study.

The healthy and natural psychological, sociocultural, and physiological eating processes were included for a few reasons. First, this discussion was included to provide the reader a starting point by which to recognize dysfunctional eating and behaviors. Second, in the context of this research, adolescents were provided workshops on eating disorders in which the normal processes of eating were discussed at an age-appropriate level. Finally, the normal eating processes were discussed with the recommendation that prevention efforts are based on a "health" model as opposed to a "disease" model.

In the literature review of specific adolescent concerns and demographic variables investigated in this research, gender and age were identified as key risk factors. It was noted in the literature review that many of the findings are based upon studies of women and girls. This is primarily due to the higher prevalence of eating disorders in the female population and may also be attributed to lack of professional agreement regarding concerns of eating disorders in males.

Other demographic variables of ethnic background, ethnic diet, and residence, as well as differences found between urban and rural youth, were discussed by drawing upon literature and research from a variety of disciplines. This approach was taken because there are limited and inconclusive findings regarding these variables in the eating disorder literature. Some researchers who have investigated ethnic background have suggested that minority individuals are more likely to exhibit eating problems and eating disorders as their level of acculturation increases.

The topics of percentage of ethnic food in the diet and residence were discussed from a perspective of considering the potential positive and negative impacts of each factor on eating behaviors and attitudes. This approach was taken in the spirit of recent research: to identify protective and risk factors involved in a range of disorders, and in light of the recent "resiliency" research. Essentially, these seldom-researched topics might be added to eating disorder data and be applied to prevention initiatives. Literature regarding the impact of these demographic variables on people, in particular Aboriginal and Non-Aboriginal Yukoners and other Northerners, was included to describe the unique challenges they face.

In the following two chapters are discussions of the methods used and the presentation of data analysis results. In the conclusion chapter, results of this study are discussed in light of eating disorder prevention programs and the unique characteristics and challenges of youth in Whitehorse.

CHAPTER III: Research Methods

Introduction

The essential methodological tasks involved in this investigation of disordered eating behaviors and attitudes of the Whitehorse youth were as follows: (1) To choose an appropriate approach and questionnaire in order to assess disordered eating behaviors and attitudes. (2) To identify and include questions regarding the impact of demographic variables on the measures of disordered eating behaviors and attitudes. The variables examined in this study were the students' EDI-2 results and age, grade, gender, ethnic background, school, ethnic diet, and residence. In addition, the EDI-2 results from Whitehorse youth and youth from larger centres in Ontario and northeastern United States were compared in order to explore potential differences between urban and semi-urban or rural youth.

The logistics of running the study was broken down into several tasks characteristic of convenience sampling and participant recruitment procedures. An appropriate sample was identified and their representativeness for the larger population of youth in Whitehorse was considered (Yukon Bureau of Statistics, 1996, 1999). Approval from the University of Alberta ethics committee and the Yukon Department of Education was then attained. Following approval, educative workshops on eating disorders were provided to the students of the schools, at which time individual parental consent forms were distributed to the students. The distribution and collection of parent and student consent forms, the administration and scoring of the EDI-2 questionnaires, and the imputing and analysis of data were involved in data collection. In this chapter, each of these tasks is described.

Selection of a Method

Sonquist & Dunkelberg (1977) stated that in survey research one should be able to test hypotheses, evaluate programs, describe populations, and build models of human behavior (p.1). Questionnaire administration is a type of survey study because one can test hypotheses and answer questions regarding a population and because one can describe behaviors or prominent concerns. The questionnaire method was selected for this study in order to access a large number of individuals in an efficient and economical manner.

Schoemaker (1998) suggested that when using an eating disorder questionnaire, it should be considered only a first step in answering questions regarding prevalence. Prevalence is usually described as the actual number of cases in a particular community over a set period of time. The usual requirements for diagnoses of eating disorders are results from questionnaires, and the collaborative information gathered from interviews, and clinician and physician's assessments. For the purposes of this study, the EDI-2 was used to attain an initial understanding of eating disorder concerns of the Whitehorse youth.

The Measurement Instrument

There are several questionnaires or scales available for measuring eating disorders and related concerns such as body image, health and exercise practices. Some of these are used to assess specific eating disorder behaviors such as the Binge Eating Questionnaire (Ordman & Kirshenbaum, 1985), the Weight Management and Eating and Exercise Questionnaire (Mintz & Betz, 1988), the Anorexic Behavior Scale (Slade, 1973), and the Bulimic Investigatory Test (Henderson & Freeman, 1987). Two of the most commonly accepted measures of eating disorders are the Eating Attitudes Test (EAT) and the Eating Disorder Inventory (EDI). The EAT was developed in 1983 by Garner and Garfinkel. The EDI and its expanded version, the EDI-2 was developed between 1984 and 1991. The initial EDI was developed by Garner and Olmstead; the latter revision by Garner alone.

The following criteria were used to select the questionnaire for this present study.

(1) It must be appropriate for a younger population. Students from grades 7 to 12 are enrolled in the Whitehorse high schools. Therefore, it was considered possible that students could be as young as 11 to 12 years of age. It was viewed important that the test items be understandable for the youth in the lower grade levels, taking into account lower levels of reading ability and maturity.

(2) It should be extensive enough to include a broad range of characteristics. In that regard, it should not be too specific, such as some questionnaires that are exclusively used to assess anorexia, bulimia, compulsive eating, or psychological concerns such as body image.

(3) It should be in a self-report format so it can be group administered. It was believed that the ideal way of obtaining a depiction of the prevalence of disordered eating behaviors and attitudes would be to assess as large a group as possible.

(4) It must have established norms for junior high school and high school students, and the reliability and validity of the test must be clearly established.

(5) It must be appropriate for use with both males and females.

(6) It must be appropriate for administration to the general, non-clinical population.

(7) It must be known to be sensitive enough for the identification of disordered eating behaviors and attitudes in the general population.

There was also examination of the literature on the eating disorder questionnaires as part of the selection process. The author of *Sex and Gender Issue Test Review* (Beere, 1990) cautioned researchers considering a scale or questionnaire of eating disorders to carefully examine the studies cited in which they had previously been used.

The selection of the questionnaire was narrowed down to the Eating Attitudes Test (EAT) and the Eating Disorders Inventory-2 (EDI-2) based on the criteria above, and based on the literature reviews of them. The *Eating Attitudes Test* was referenced a greater number of times than was the *Eating Disorder Inventory –2*. However, the *Eating Disorder Inventory –2* also had several citings. Garner and Olmsted (1984) compared the EAT and the EDI. They noted that the approach taken by the test developers with scale development was different for both, although both have since been validated by numerous studies. They reported that the EAT was developed based on an empirical approach, and the EDI-2 was developed based on a theoretical approach. Their conclusions for both were as follows:

> The EAT is a sound measure of a range of symptoms common in anorexia nervosa, and the EDI focuses more on the specific cognitive and behavioral dimensions that may meaningfully differentiate subgroups of patients; or which may distinguish those with serious psychopathology from "normal" dieters (p. 9).

The EAT, like the EDI-2 test, had much to offer for this study, given that it was well documented as a reliable and valid test and screen of eating disorders. It has been used successfully with a variety of populations in the identification of both the propensity and the prevalence of eating disorders (Brooks-Gunn & Warren, 1985; Button & Whitehouse, 1981; Carter & Duncan, 1984; Carter & Moss, 1984; Clarke & Palmer, 1983; Cooper & Fairburn, 1983; Eisler & Szmukler, 1985; Garner & Garfinkel, 1980; & Steinhausen, 1984). One drawback noted with both the EAT and the EDI-2 was that there are some items that are inapplicable to males, such as "I have regular menstrual periods."

A decisive factor in choosing the EDI-2 over the EAT was that the EDI-2 was suitable for the younger students in this study. The EAT was developed for high school students. Traditionally, the students in high schools start in grades 9 or 10 and finish in grades 12 or 13. The items on the EDI-2 were developed for a literacy level corresponding to grade 5. Consequently, it can be administered to youth as young as 11 years of age.

Garner (1991) provided information concerning reliability and validity studies with the EDI and EDI-2. He stated that a final criterion for the EDI subscales is that there must be a coefficient of internal consistency of at least .80 for an eating disorder sample. He reported that Garner & Olmsted (1984) found reliability coefficients between .83 to .93 for the original subscales. He also indicated that their findings were recalculated using updated samples and that the coefficients are much the same.

Garner cited studies regarding examination of the EDI's internal consistency with the previous and original data. Welch (1988) reported lower alphas ranging from .70 to .81. With non-patient groups, Racitie and Norcross (1987) and Vanderheyden, Fekken and Boland (1988) found reliability to be similar to those of the initial validation study. Shore and Porter (1990) reported lower reliability estimates on some scales and with some age groups. They found a reliability score of .70 for the *Maturity Fears* scale with younger persons and a reliability score of .70 for males on the *Perfectionism* and *Interpersonal Distrust* scales.

Garner (1991) described several analyses that were utilized in the establishment of the EDI-2 validity. Item selection, investigations of the fit with the criterion groups, and the fit between patients' EDI-2 subscale scores and clinicians' diagnoses were included in these analyses. As well, Garner identified significant differences between groups of AN-R and AN-B subjects on the *Bulimia* subscale. Convergent and discriminant validity was demonstrated by the pattern of correlations among EDI subscales and among a number of other measures with different degrees of conceptual overlap with EDI subscales. In the EDI-2 manual, Garner cited EDI-2 studies regarding the content validity, criterion-related validity, concurrent validity, construct validity, discriminant and convergent validity, and factor analysis.

Other review and research sources were noted for discussion of the applications of the EDI-2. It is the most often reviewed eating disorder questionnaire in test review sources such as *Buros and Mental Measurement Yearbooks*. It was the only eating disorder test listed in the *Twelfth Buros Mental Measurements Yearbook* (1995) and in *Tests in Print IV* (Buros, 1994). The frequency with which the EDI-2 is reviewed is a notable indicator of its widespread use in clinical and research situations. In addition, the EDI-2 is reviewed along with the EAT in *Sex and Gender Issues: A Handbook of Tests and Measures* (1990), *Tests: A Comprehensive Reference for Assessments in Psychology* (1997), and *Test Critiques* (1994).

Philip Ash and Steven Schinke (1994) indicated that the strengths of the EDI-2 are sensitivity to clinical change, usefulness for gathering information of current and historical diagnostic relevance, and inclusion of norms for clinical and non-clinical populations. Brookings (1994) reviewed the advantages and disadvantages of the EDI-2. He stated that the EDI-2 is popular because of the multidimensional approach taken by the test developer. Essentially, Garner (1991) included a broader array of etiological factors and treatment effects than do Garner and Garfinkel (1979) with their unidimensional measures on the EAT. Professor Brooking's concerns about the EDI-2 were that further multitrait-multimethod studies are needed and that some of the core scales have not been validated for clinical assessment and intervention. He also noted that initial normative samples were too small, but he acknowledged that in the revised manual Garner (1991) included larger and more representative samples. He concluded, "... that despite some problems the EDI-2 has much to recommend as a predictor and outcome measure" (p.232). He summarized that key advantages of the EDI-2 manual are the inclusion of extensive data and a factor analysis, in which the test author demonstrated distinct, factorally valid subscales. He also indicated that because of the popularity of the EDI there is a sizeable database of a variety of populations.

Garner's (1991) descriptions of the EDI-2 are helpful in the explication of the EDI-2. He described it in the following way:

> It is a widely used self-report measure of symptoms commonly associated with anorexia nervosa (AN) and bulimia nervosa (BN). It is an easily administered self-report measure that provides standardized subscale scores on eight dimensions that are clinically relevant to eating disorders. It consists of 64 items and 27 new items on three additional provisional scales presented in a six-point format requiring respondents to answer whether each item applies "always," "usually," "often," "sometimes," "rarely," or "never." (p.5)

Garner (1991) stated that the EDI–2 is a questionnaire that was developed on the premise that eating disorders are multidetermined and multidimensional. Initially, it was comprised of three subscales intended to measure one's attitudes and behaviors associated with eating, weight, and shape and five subscales intended to assess the psychological traits characteristic of or clinically relevant to eating disorders. These scales have since been supplemented with the provisional scales of *Asceticism, Impulse Regulation*, and *Social Insecurity*. The physical, social, and psychological aspects involved in eating disorders are reflected the EDI-2 scales and their respective items.

Garner (1991) indicated that the EDI-2 is intended to measure relevant psychological and behavioral traits consistent with a multidimensional understanding of eating disorders. According to Garner, "It is aimed at the delineation and precise measurement of certain psychological traits or symptom clusters presumed to have relevance in the understanding and treatment of eating disorders. The EDI-2 provides a psychological profile that is consistent with the understanding of eating disorders as heterogeneous syndromes" (p.1). The author also stated that although there are a number of studies in which total EDI scores are computed by summing all scores across subscales, each EDI subscale is intended to measure a conceptually independent trait and that total score analysis may affect interpretation. In addition, he cautioned against using only certain items or selected subscales. However, Garner acknowledged that in some studies there is evidence of a relationship between total EDI scores and psychopathology measured with other psychometric instruments (Heilbrun & Hausman, 1990& Yate, Sieleni, & Bowers, 1989).

Descriptions of the EDI-2 subscales and its provisional scales are documented in Appendix 3. These were drawn from the EDI-2 manual explanations provided by the test author, Garner, and from the discussion provided about each scale in Brookings' (1994) review.

What was particularly interesting about the EDI-2 psychological constructs was that they are characteristic of problems that all people deal with to a certain degree, especially adolescents. For example, developmental and adolescent research is replete with examples of youth dealing with maturity fears, especially in early adolescence. For example, Anna Freud (1965) is attributed with the term "flight from womanhood," which she used to describe a girl's failure to eat as one denial response to growth (p.105). Other constructs such as "impulse regulation" are considered characteristic of many youth. Offer and Sabshin (1990) who edited a book on adolescent psychology, suggested that impulse regulation concerns are normal for the adolescent and should not be considered unhealthy. Constructs regarding preoccupation or dissatisfaction with one's self, in particular one's body, are typical of the both adults and adolescents. However, body image concerns are likely more pertinent in adolescence, because a major challenge for the adolescent is the evaluation and definition of identity.

Administration Guidelines and Details

The EDI-2 can be administered to individuals and groups and has been used with people as young as 11 years of age. Garner (1991) cited the following successful research of youngsters conducted by Fabian and Thompson (1989); Faust (1987); Garner, Garfinkel, Rockert, and Olmsted (1987); and Shore and Porter (1990). Garner added that the provisional scales have not been validated with children younger than 12 years of age. In the test manual, he described administration instructions and ideal testing conditions. Essentially, participants are to be informed that the EDI-2 is utilized for the measurement of attitudes, feelings, and behaviors related to eating. Participants are also to be informed that there are no right or wrong answers, and they are to be given as much time as necessary. Garner recommended that respondents be given the opportunity to ask questions and to ask for clarification of items.

The sample population of adolescents in Whitehorse (n=454) were given instructions as indicated in the manual and on the questionnaires. This researcher distributed and administered the EDI-2 questionnaires. Students were encouraged to complete the items on their own; however, there was discussion among some students in response to items. There were two students out of the entire sample that required help from their learning assistance teacher. They were read the items aloud but responded privately. Some students asked for clarification of items, and they were provided explanations or examples. Particular items that required clarification are noted below. Generally, students from all the age groups asked for either the explication of a particular word, or what the term meant in the context of their age and gender. Some examples of students' questions are as follows:

> *I feel I am ineffective as a person.* Some students asked for explanations of the word "ineffective." The explanation given was " when you feel that you cannot do anything well."
>
> *I think about bingeing (overeating*). Teenage boys asked if their consumption of a large amount of food at one time qualified as bingeing. Some students misread "bingeing" as "binging" and didn't know what "binging" meant. The

meaning of the word was clarified for these students.

I have close relationships. Students asked if this item was applicable to all relationships or just peer relationships. They were encouraged to consider all significant relationships.

I wish I could return to the security of childhood. For the most part, younger students asked about this item, some indicated that they felt that they were still children. They were encouraged to consider the earlier childhood years when their parents were more involved in their care.

I get frightened when my feelings are too strong. Students asked what this meant. Examples were given such as, "Perhaps you get scared when you feel too much emotion such as too much happiness, fear, or anger."

I like the shape of my buttocks. Many male teenagers were amused with questions regarding the body. They were encouraged to respond to the items with their estimation of like/dislike of parts of the body.

Along with EDI-2 items on the questionnaire, a label was applied to the top of each of the answer sheets in order to collect the demographic information investigated in this study: age, grade, school, ethnic background, ethnic diet, and residence. Some students required clarification regarding demographic questions, in particular the questions regarding ethnic background, percentage of ethnic food in the diet, and residence. Some students indicated they did not know what their ethnic background was. They were encouraged to refer to their parents' last names and if they were still unsure, to respond with "Canadian." Regarding ethnic diet, they were asked to determine if they ate an ethnic diet related to their own ethnic background. Youth were advised to put 0% if they were not aware of any ethnic diet. The variable residence did not require as much clarification. Students were informed that if they had to leave their family and community to attend school they should indicate "yes." For all requests of clarification, students were given examples in order to illustrate the intent of the question or item.

The Sample

The Yukon Department of Education and each school's administration were contacted for permission to collect data. Initially, they were hesitant to allow the study be run in their schools and wanted to ensure that appropriate procedures were followed. They were willing to allow this research project to proceed, provided the following conditions were met: (1) This researcher was involved in the entire study: explanation of eating disorders, data collection, and data analysis; (2) The students were provided with a class about and opportunity for discussion of eating disorders; (3) The students and teachers were provided with a list of psychologists and other mental health practitioners that they could contact in the event that a student had an eating disorder or related concern; and (4) The workshops and questionnaires could be considered appropriate components of the curriculum. These conditions were met, and this researcher voiced a willingness to return to the schools to provide an explanation of the results of the study.

The sample design was restricted to convenience sampling because the Yukon Department of Education and each school's administration specified which classes of students I could meet with.

(1) Principals in the two of the high schools allowed the administration of the questionnaires to students in Career and Personal Planning (CAPP) classes because eating disorders were considered to be a subtopic of nutrition curriculum materials. At present, there is not a set curriculum including eating disorders, although some individual teachers have included discussions of them in their CAPP classes. With an informal hand count of students, only about one-quarter to one-half of the students indicated previous classes or instruction about eating disorders. There were one-half to three-quarters of the students who acknowledged some level of understanding, in varying degrees, of eating disorders.

(2) In one high school, the curriculum is geared towards the experiential studies of drama, music, art, and sciences. In this school, the CAPP curriculum is integrated into their classes. Students from four of the six classes in this school participated in the study; the other two were unavailable during the research period due to experiential outings.

(3) The administration and staff of one high school indicated that the CAPP curriculum is integrated into mandatory religion classes. They provided the entire student body. Although the sample size was largest from this school, there was no need to apply random selection procedures, as the size was still considered manageable.

Unfortunately, with convenience sampling there is not an opportunity to apply random selection techniques. Therefore, speculation regarding the generalizability and representativeness of the sample of students is limited. However, because of the mandatory requirement that students must take CAPP and/or religion classes, potential bias regarding sample selection was considered minimal. In a sense, the sample was representative of Whitehorse youth because all students who participated were from a variety of racial and SES backgrounds. The reasons students did not participate was that they had already taken their required class in a previous term or were absent for other health or scholastic reasons.

Students in Whitehorse begin to attend high school in either grade 7 or 8, depending on the ceiling grade of their elementary school. The students involved in this study were from the three major high schools and one annex school in Whitehorse. The annex school is described as a site where youth can attend experiential programs not offered at the other schools. Its students are drawn from the population of the other three schools. There was a total population of approximately 800 students in two of the schools. In the other high school, there was a total population of approximately 400 students. The total population of the annex high school was approximately 120 students.

There were 454 students who participated in this study. The precise numbers of students categorized according to age, grade, gender, school, ethnic diet, percentage of ethnic food in the diet, and residence are in Table 1. There were 209 males and 244 females who completed the questionnaires. The largest age group was found to be the students between the ages of 14 to 16. It was found that 60.9% of the students who participated in this study were from one school. The largest grade sample was grade 9 students, although all grade groups were adequately represented.

There were six ethnic groups. The largest groups were the students with no ethnic background identified other than "Canadian," and with students who report European ethnic background. The other ethnic groups of Aboriginal, Asian, and African ethnic background were significantly smaller. The students with Aboriginal ethnic background were the largest minority group at 11.3%. The numbers of students acknowledging a higher percentage of ethnic food in their diets were much less than those with little or no ethnic diet indicated.

Most students were still living with family and community. There were 11% of the students who indicated that they left home and community to attend school. There were 6.4% of the students who did not respond to the question pertaining to residence.

The representativeness of the 454 youth for all the Whitehorse youth was examined by noting Yukon and Whitehorse statistics. According to the *Community Profiles of the Census 1996* and the *Monthly Yukon Population Estimates* (1998 & 1999) published by the Bureau of Statistics, there were approximately 31,000 people in the Yukon and 19,000 people in Whitehorse around the time of the study. There were 1540 males and 1415 females between the ages of 10 and 19.

Students were required to attend schools within their districts. Each district was reported to have a variety of social economic levels and household characteristics such as family size, level of parents' education, occupation, social economic status, marital status, and ethnic origin). The Aboriginal population of Whitehorse was 2,605 persons and the Non-Aboriginal population is 16,455 (Statistics Canada, 1998). There was a range of visible ethnic minorities in Whitehorse. The groups and numbers of people in these groups were described by Statistics Canada (1998). There were 185 South Asian Canadians, 130 Chinese Canadians, 190 Southeast Asian Canadians, 90 Filipino Canadians, and 70 African-Canadians (Statistics Yukon, 1996).

Table 1

Numbers and Percentages of Whitehorse Students on Variables of Gender, Age, Grade, School, Ethnic Background and Diet, and Residence

Independent Variables	Frequency	Percentage
Gender		
Males	209	46.1
Females	244	53.9
Age		
11	1	0.2
12	42	9.3
13	82	18.1
14	86	19.0
15	86	19.0
16	91	20.1
17	49	10.8
18	14	3.1
19	2	0.4
Grade		
7	67	14.8
8	77	17.0
9	102	22.5
10	80	17.7
11	90	19.9
12	37	8.2
School		
1	276	60.9
2	72	15.9
3	45	9.9
4	60	13.2
Residence		
At home	374	82.6
Away from home	50	11.0
Ethnic Diet Percentage		
0	288	64.3
25	91	20.1
50	35	7.7
75	23	5.1
100	11	2.4

Table 1 cont.

Ethnic Background*	N	%
1. None reported	141	31.1
2. Aboriginal	24	5.3
3. Aboriginal/other noted	27	6.0
4. European	241	53.2
5. Asian	13	2.9
6. African	7	1.5

*Students identified themselves as Canadian with or without ethnic background.

Data Collection

Permission was obtained from the Department of Education in February 2000. Shortly thereafter, each school's administration and teaching staff gave permission and indicated appropriate times and dates. The numbers of students participating varied in each of the schools. As noted earlier, some of the schools' principals and teachers required a fit of the study with their curriculum. With most of the schools, they attempted to provide student samples from all grades. There were 454 students who completed questionnaires; this was considered a substantial proportion of the Whitehorse youth. In recent statistical reports, the entire Whitehorse high school population was estimated to be approximately 2700 students (Bureau of Statistics, 1998, 1999).

Data collection was preceded by classroom presentations on eating disorders. In one school, the students were given the classroom presentations following the EDI-2 administration. This deviation was considered a potential control for the possible effects of the presentations on students' response style. The presentations and questionnaire administration took place in February and March 2000. When the presentations were given to the students, the classroom teachers were present and often participated in the discussion. In one school, the school counselor attended each of the sessions.

During the presentations, this researcher defined each of the eating disorders, provided explanations regarding their onset and continuation, and directed students to prevention and intervention steps they could take for themselves. Because the presentations were provided in the context of CAPP curriculum, discussion was also extended to career and research topics. Psychologists' work and the training required was described. In addition, this researcher explained what research is and discussed the objectives of this particular research project. This discussion regarding the research project was also considered an opportunity to ensure that the ethical requirements of informed consent were addressed. To further deal with ethical issues of informed consent, students were given the written details of the study along with the parental consent forms. These were read aloud and explained to the students to ensure understanding. Copies of the parent and student consent forms, and an outline of the presentations are provided in Appendix 1 and 2.

Data collection took place 1 to 3 weeks after the eating disorder presentations. At the school in which the presentations and data collection were conducted on the same day, parental consent forms had been explained and distributed by their teachers one to two weeks prior to the presentation/data collection days. Data collection was commenced in late February 2000 and completed in late March 2000. The EDI-2 was administered during class time and only after the students had signed their consent forms and had returned signed parent consent forms.

The ethical requirements for most research projects conducted with people are that informed consent and confidentiality are ensured. To secure anonymity, students were asked to leave their names off the forms, and the consent forms and questionnaires were collected separately. In addition, students were advised that their participation was voluntary and that if they chose to decline participation, they could work on something else but must either stay in the classroom under their teacher's supervision or go to the library. Out of the entire sample, only three students opted not to participate. Overall, the staff and students of the schools were very accommodating, interested in the topic, and helpful. The presentations and data collection were easily achieved.

Scoring Guidelines

Garner (1991) stated that the primary use of the EDI-2 is for the clinical evaluation of symptoms associated with eating disorders. He recommended the use of the profile comparisons for clinical use. In the context of this prevalence study, there was an examination of profiles as well as the examination of elevations for each of the subscales.

Garner (1991) addressed the issue of choosing a cutoff score in both clinical and research settings. He stated that the decision regarding the precise cutoff score to employ depends on the purpose of screening. He reported that when one uses a relatively high or conservative cutoff score there is an increase in the number of false negatives and a reduction in the number of false positives. He recommended use of the normative data in the test manual when determining appropriate cutoff scores. He added that another approach to differentiating between normal individuals and individuals with disordered eating behaviors and attitudes, is to examine the scale elevations on the scales most often associated with an eating disorder. He indicated that the EDI-2 scales most often identified for persons with an eating disorder, and most effective for differentiation of normal persons from persons with eating disorders are *Drive for Thinness, Bulimia*, and *Body Dissatisfaction*. To substantiate the validity of Garner's claims regarding one of these scales, Vanderheden and Boland (1987) found that they were able to correctly classify 73% of various levels of disturbed eating with the *Drive for Thinness* scale.

Data Preparation and Analysis

There were 454 EDI-2 questionnaires completed by the students, and each one was hand-scored. This was a sizeable amount to score, and with hand scoring there is always a potential for some amount of human error. To reduce error, templates were developed in order to isolate one to three EDI-2 subscales at a time. Scoring was completed by this researcher and with the assistance of three adults who were instructed about questionnaire scoring procedures.

The EDI-2 subscale results and the demographic data responses were imputed into the SPSS-10 computer program for data analysis. The data was analyzed for scale elevations based on the norms provided in the EDI-2 for cutoff scores, and based on norms for measures of central tendency and variability.

Norms that are referred to in the EDI-2 Professional Manual (Garner, 1991) were based on those generated from eating disorder populations and from samples of non-patient high school boys and girls. Garner (1991) recommended use of appropriate age and sex norms from the studies of Rosen, Silberg, and Gross (1988) and Shore and Porter (1990). Significant findings of their research efforts are that they identified gender differences on the EDI-2 and found that younger students differ from older ones (p.19).

The high school norms which were referred to for the analysis of EDI-2 raw scores and percentiles, documented in the EDI-2 manual are based on a study by Rosen, Silberg, and Gross (1988) of 698 girls and 675 boys. Students from three public high schools in northeastern United States participated in this study. The schools are situated in three sites, a semi-rural town, the suburb of a major metropolis, and a major metropolis. The norms for eating disorder groups were based on a sample of 889 patients who had been diagnosed with an eating disorder. Garner (1991) also provided norms for each separate eating disorder; however, he recommended use of the norms for the combined eating disorder groups.

The results from the Rosen, Silberg, and Gross study (1988) were referred to in this research because norms for both high school males and females were provided. Percentile equivalents at the 75 to 99 percentiles were considered to be an indication of the most problematic concerns. Students scoring below the 75th percentile were determined to be in a normal range, and thus were not perceived as having a propensity for an eating disorder. Consult Appendix 4 for norms regarding eating disorder groups and for norms for high school males and females.

Each of the student's EDI-2 profiles was analyzed. The objective was to identify how many students scored above the 75th percentile according to norms for high school students on eight of the subscales (Rosen, Silberg, & Gross, (1988), and according to eating disorder norms on all 11 EDI-2 subscales. Essentially, for each individual student's profile, the number of subscales in which the students scored above the 75th percentile was tallied. A second step of this profile analysis involved the identification of the frequency with which the Whitehorse students scored above a cutoff score on each subscale. The cutoff score used here was determined by identifying the lower end of scores in the eating disorder norm group as depicted on the EDI-2 profile forms. This analysis allowed the identification of specific eating disorder concerns most problematic for the Whitehorse students. A sample EDI-2 profile form is provided in Appendix 7.

The EDI-2 results for girls and boys that were provided in the manual and based on the research by Shore and Porter (1990), and Rosen, Silberg and Gross (1988) were used for t-tests comparisons with Whitehorse student sample. Shore and Porter (1990) described the EDI-2 subscale means and standard deviations for elementary and secondary school students in Windsor and Essex County, Ontario. Their subject sample included 231 girls between 14 and 18 years of age, 183 girls between ages 11 and 13, 63 boys between ages 14 and 18, and 133 boys between ages 11 and 13. The youth who participated in the Rosen, Silberg and Gross (1988) study included students between grades 9 to 12 from schools in northeastern United States. The measures of central tendency and variability from the Shore and Porter (1990) and Rosen, Silberg and Gross (1986) studies are included in a section of the data analysis chapter.

The demographic information collected on the questionnaires was identified as the independent variables of this study. They were: age, gender, grade, school, ethnic background, ethnic diet, and residence. The students' results on the EDI-2 subscales were analyzed according to each of these categorizations. This involved the identification of the frequency with which students from each demographic category scored above the cutoff. In addition, 68% confidence intervals regarding these findings were calculated. Thus, predictions were made with 68% confidence that the EDI-2 results found with this sample of Whitehorse students were representative of Whitehorse youth. In summation, the data analysis procedure was intended to examine the individual, group, and overall disordered eating behaviors and attitudes of the Whitehorse youth.

Limitations and Delimitations of the Research

In this section, the preliminary limitations and delimitations of this research are discussed. Specifically, there is discussion of the questionnaire administration procedures, the utility and restrictions of the EDI-2, the student sample and their characteristics, and the data analysis procedures.

Questionnaire administration and retrospective studies are considered the principle methods one can use to determine the prevalence or likelihood of eating disorders in large populations. There are problems with both investigative procedures. Shoemaker (1998) stated that the possible sources of distortion in the measurement and methodology of retrospective studies are the following: the causal interpretation of correlations, hindsight interpretation, and negative selection (Cohen & Cohen, 1984; Shaw & Garfinkel, 1990; Vandereycken & Meermann, 1992; Fairburn, Welch, Norman, O'Connor & Doll, 1996).

As noted earlier, the EDI-2 was the eating disorder questionnaire used in this study. Questionnaire administration was considered the most effective means of identifying prevalence in large groups of the general population (Garner, 1991). However, the results from questionnaires are usually not considered diagnostically sound indices of actual eating disorder occurrences. Garner (1991) recommended that questionnaires be utilized as a first step in diagnosis followed by clinical interviews and other collaborative information such as physicians' and therapists' assessments. Therefore, one limitation of this study is that there were no follow-up interviews and additional testing conducted. These procedures were not feasible in the context of this research. Instead, the results were considered indicative of disordered eating behaviors and attitudes and as preliminary measures of actual eating disorder prevalence.

Another limitation regarding questionnaire use, specifically with the use of the EDI-2, was that there are no indices for participants' response styles. Shoemaker (1998) indicated that sole use of a questionnaire for diagnostic purposes is problematic because of the denial tendency that is characteristic of eating disorder persons. Ideally, validity scales are consulted to identify response styles, such as fake-good, fake-bad, denial, or inconsistency. Because there are no such scales on the EDI-2, each individual student's validity could not be verified in this research project. Consequently, the findings from this research were based on the unverifiable premise that the students completed them honestly and consistently. In the EDI-2 manual, Garner (1991) stated that "Reassurance and a positive-test-taking set may be provided by indicating that the EDI is a standardized instrument that has been completed by thousands of people" (p.7). Students were given appropriate instructions and encouragement regarding questionnaire completion; however, the inability to assess the validity of responses is a potential limitation.

A further limitation of the EDI-2 is that while there are subscale scores, there is no overall score; therefore, the results cannot be compared to findings from studies using questionnaires that have overall scores such as the EAT. Instead, Garner (1991) indicated that there are two methods of analysis possible: (1) The analysis of individual profiles over the 75th percentile according to selected norms; (2) The analysis of scores on key scales most identified with eating disorders such as *Drive for Thinness, Bulimia*, and *Body Dissatisfaction*.

Another problem is that, despite the reputed validity and reliability of the EDI-2, it was designed to identify eating-disorder behaviors and attitudes with several constructs, and therefore it may overlap with other psychological constructs. For example, Garner (1991) indicated concerns regarding some of the scales: The provisional scales have not yet been normed for younger ages, bingeing and purging are not entirely differentiated on the *Bulimia* scale, and the *Maturity Fears* scale is primarily intended for use with older teens and adults.

Further aspects regarding the limitations and delimitations of the EDI-2 also need to be addressed here. First, I review the reason why this psychometric instrument was selected, and then I discuss how the test was used to fulfill the study's objectives.

The key advantage noted in choosing the EDI-2 for this research project was the fulfillment of primary criteria required for this study: that it can be administered to the Whitehorse age group of 11 to 19 years of age. As well, as test reviewers indicated, validity and reliability of the EDI-2 are evident in a number of research efforts (Garner, 1991). A final reason for the fit of the EDI-2 with this research was that it is intended for measurement of behavioral and psychological factors that have consistently been identified in the research of eating disorders, such as maturity fears, drive for thinness, bulimia, and body dissatisfaction. Furthermore, because one can determine psychological characteristics and specific eating behaviors and attitudes with EDI-2, prevention and intervention efforts can be focused on specific identified concerns.

A recent qualitative study called *An Eating Disorder Needs Assessment* was completed in isolated Northern B.C. communities with demographics similar to the Yukon. The reported findings were that both parents and professionals indicated a concern about eating disorder occurrences and noted the lack of resources for prevention, intervention, and treatment (Smye, Niblock & Anderson, 1998). Ideally, the results from this present research can supplement their research and be applied to better understanding eating disorder concerns in the North.

The sampling techniques also need be considered in this discussion of limitations and delimitations. The number of students from each school varied. From one school, 60.9% of the students participated; whereas considerably fewer students from each of the other schools participated. However, in all these schools the sample was drawn from mandatory CAPP and religion classes. Therefore, students came from a range of cultural and socioeconomic groups and were considered fairly representative of the Whitehorse youth.

The limitations and delimitations noted in the data analysis were that a range of analyses were used to identify prevalence, to compare the Whitehorse youth with the other youth, and to investigate the variables of age, gender, grade, ethnic background, ethnic diet, and residence. The results were analyzed with frequency counts of students scoring above percentile and cutoff scores and with the statistical results from the t-tests. It was believed that the application of frequency analysis would allow the discernment of overall and group population concerns.

Chapter IV: Data Results

In the previous chapter, methods involved in data collection and a preliminary outline of the data analysis approach were discussed. In this chapter, the results of the analyses are presented and discussed.

This research was completed with the objective of determining the prevalence of disordered eating behaviors and attitudes for the Whitehorse youth. As well, the EDI-2 results for the Whitehorse youth were compared to the EDI-2 results for youth from Ontario and from northeastern United States that were cited in the manual. This analysis was performed to compare differences between youth in smaller, less centralized communities with youth in larger, more centralized communities. In addition, another objective was to identify concerns for each of the groups of Whitehorse students, categorized by the variables of age, grade, gender, ethnic background, ethnic diet, and residence. Finally, to ensure that the students from each of the Whitehorse schools were representative of the Whitehorse youth, their EDI-2 results categorized by school were analyzed. The school results are presented below.

School

Research Question: What is the prevalence of disordered eating behaviors and attitudes in students in each of the Whitehorse schools?

The students that participated in this research were from four schools in Whitehorse. The numbers of students in the schools were unequal; 60.9% of the students came from one school, and less than 20% came from each of the other three schools. The frequency with which school-categorized students scored above the cutoff on the EDI-2 was analyzed. Minimal differences were identified between the students from each of the schools. Furthermore, when 68% confidence intervals were calculated, few significant differences were noted: Schools 1 and 2 scored more frequently than School 4 on *Bulimia,* and less frequently on *Aestheticism.* Given these results, it was concluded that these students were representative of the Whitehorse youth. It was also concluded that school was not a potential extraneous variable.

Description of the Whitehorse Sample Based on Analysis with SPSS-10

Measures of central tendency and variability on the EDI-2 subscales for the Whitehorse students are provided in Table 2. The medians of the students were consistently lower than their means on most of the subscales. This finding was considered to be evidence that the Whitehorse youth were positively skewed on the EDI-2. This was not considered atypical because Garner (1991) stated that the assessment of normal populations for eating disorders often results in positively skewed distributions. For example, this "positive skew" pattern was evident in the research conducted by Shore and Porter (1990) and Rosen, Silberg and Gross (1986) with high school youth.

Table 2
Means, Medians, and Standard Deviations for Whitehorse Youth[*]

EDI- 2 Scale	M	Md	SD	Range
Drive for Thinness	2.54	0.00	3.90	0-21
Bulimia	1.52	0.00	2.80	0-21
Body Dissatisfaction	6.08	3.00	6.81	0-28
Ineffectiveness	2.92	1.00	4.75	0-31
Perfectionism	4.41	3.00	3.84	0-18
Interpersonal D.	3.61	3.00	3.72	0-21
Interoceptive A.	2.83	1.00	4.40	0-30
Maturity Fears	4.95	4.00	3.81	0-23
Aestheticism	3.83	3.00	2.74	0-18
Impulse Regulation	3.62	2.00	4.81	0-30
Social Insecurity	4.03	3.00	4.06	0-24

[*] N= 450 students; 4 students were omitted here due to incomplete data on their profiles.

Further descriptive information regarding the frequencies with which students scored on each item of the EDI-2 scales is included in Appendix 5. Essentially, from these results the earlier finding of positive skew is confirmed. For most scales, 0 was the most frequent score obtained. However, there were exceptions to this tendency. For scales such as *Body Dissatisfaction,* only 25.4% of the sample had a score of 0, and only 16% had a score of 0 on the *Perfectionism* scale. On the *Interpersonal Distrust* scale, only 23.4% had a score of 0; and on the *Maturity Fears* and *Aestheticism* scales, only 7.3 and 6.4% scored 0. Interpretation of these results is that many of the disordered eating behaviors and attitudes characterized by these five scales are common to the Whitehorse youth.

EDI-2 Profile Analysis

Research Question: What is the prevalence of disordered eating behaviors and attitudes in the Whitehorse students according to gender?

Garner (1991) indicated that entire profiles or specific scales could be considered when determining eating disorder concerns with the EDI-2. He pointed out that the subscales *Bulimia, Drive for Thinness, Body Dissatisfaction,* and *Perfectionism* have been used as initial identifiers in the diagnosis of an eating disorder. However, he also recommended examination of one's entire EDI-2 profile in order to identify concerns and areas of treatment. When this multidimensional perspective is applied to analysis of an individual's EDI-2 profile, it is expected that the greater the number of elevated scales on an EDI-2 profile, the greater the likelihood of an eating disorder. In the EDI-2 manual, Garner did not specify how many subscales should be elevated before a diagnosis for an eating disorder is warranted. However, he provided examples in which individuals had been diagnosed with an eating disorder when they had only four subscale elevations on the EDI-2. In Table 3, the results presented are based on considering the number of Whitehorse students with EDI-2 subscales elevated above the 75th percentile. The high school group norms and the eating disorder norms used for this research were cited in the EDI-2 manual and are provided in Appendix 4.

Interpretation of the results of this analysis, are that there were more males than females that exhibited disordered eating behaviors and attitudes in the Whitehorse students. There were 2.4% of the males and 1.6% of the females who have subscale scores above the 75th percentile on all eight subscales. This was in contrast to the research findings that approximately 6% of females and less than 1% of males in the general population exhibit disordered eating behaviors and attitudes (Anderson, 1991; Laverty, 1995; Hsu, 1990, & Sugar, 1993). When students scoring above the 75th percentile on six or more subscales were considered, the numbers were closer to previous research findings regarding eating disorder prevalence in girls, but still exceptionally high for the boys: 6.5% of the girls and 8.6% of the boys scored above the 75th percentile.

Table 3

Frequency and Percentage of Students Scoring Above 75 %ile on 0-8 EDI-2 Subscales

	Males (N=209)		Females (N=244)	
Number of Scales Scored Above 75%ile	f	%	f	%
O Subscales	23	11.0	54	22.1
1 Subscale	55	26.3	77	31.6
2 Subscales	47	22.4	46	18.9
3 Subscales	27	12.9	23	9.4
4 Subscales	24	11.5	19	7.8
5 Subscales	14	6.7	8	3.3
6 Subscales	8	3.8	8	3.3
7 Subscales	5	2.4	4	1.6
8 Subscales	5	2.4	4	1.6

Note: The 75th percentile cutoff used for this analysis was based on the high school norms provided in the EDI-2 manual by Rosen, Silberg, and Gross (1988).

In Table 4, all eleven scales were included as opposed to the eight scales shown with the high school norm results. Garner (1991) indicated that research has not yet been sufficiently directed at the establishment of norms for youth on the EDI-2 provisional subscales, *Asceticism, Impulse Regulation* and *Social Insecurity.* Nonetheless, the Whitehorse students' results were included here in order to provide data regarding youth on these scales.

The Whitehorse students' profiles were compared to EDI-2 norms for persons with eating disorders on all 11 subscales. In this analysis, fewer Whitehorse students scored above the 75th percentile. This finding was expected given that the cutoff scores for eating disorder groups were much higher. Whitehorse males scored above the 75th percentile on a greater number of the subscales than did the Whitehorse females. There were 1.0% of males and 0% of females scoring above the 75th percentile on all 11 subscales. In keeping with the analysis approach used with the high school norms, when fewer scales were considered there were slight differences in numbers of students scoring above the cutoff. With eight subscales considered, 0% of males and 1% of females scored above the 75th percentile, and there are 2.0% males and 1.2% females that scored above the 75th percentile on six or more subscales. Females scored slightly more often than did males when only six or eight subscales were used as criterion. Interpretation of these findings was that for the females, their specific eating disorder concerns might best be identified with fewer EDI-2 scales.

Table 4
Frequency of Students Scoring Above the 75 %ile on 0-11 EDI-2 Subscales

	Males (N=209)		Females (N=244)	
Number of Subscales Scored Above 75%ile	f	%	f	%
0 Subscale	89	46.9	113	46.3
1 Subscale	64	30.6	83	34.0
2 Subscales	36	17.2	26	10.7
3 Subscales	10	4.8	15	6.1
4 Subscales	4	1.9	2	0.8
5 Subscales	3	1.4	2	0.8
6 Subscales	0	0.0	1	0.4
7 Subscales	1	0.5	0	0.0
8 Subscales	0	0.0	1	0.4
9 Subscales	1	0.5	0	0.0
10 Subscales	0	0.0	1	0.4
11 Subscales	2	1.0	0	0.0

Note: The 75th percentile cutoff used was based on the eating disorder norms provided in the EDI-2 manual by Garner (1991).

Frequency of Above Cutoff Scorers for Each EDI-2 Scale

In this section, results and discussion are presented regarding the disordered eating behaviors and attitudes that were found to be of greatest concern for each of the student groups of Whitehorse youth. The numbers of students scoring above the cutoff score on the EDI-2 scales were identified from each of the groups of students categorized by gender, age, grade, ethnic background, ethnic diet, and residence.

The cutoff scores utilized in this analysis, the numbers of overall students, and the numbers of boys and girls that scored above the cutoff, are documented in Table 6. In addition, the percentages of boys and girls scoring above the cutoff are visually depicted in Figure 1. The cutoff scores utilized for this analysis are representative of the lower limit of scores portrayed on the EDI-2 profile form for eating disorder norms (Garner, 1991, p.89). These scores were chosen so that the students with subclinical eating disorder concerns would be included. In addition, this study was conceived primarily as a screening study for disordered eating behaviors and attitudes, consequently any potential Type I errors were considered less problematic than they might be in a diagnostic study.

When overall eating disorder concerns for the boys and girls were noted, *Maturity Fears* was the scale with the greatest number of students above the cutoff. There were also large numbers of students who scored above the cutoff on the scales of *Interpersonal Distrust, Aestheticism*, and *Impulse Regulation*. There are two possible interpretations regarding these frequently scored scales. One is that these were problems for a large number of the Whitehorse students; the other is that the cutoff scores chosen for these scales might have been too low for adequate differentiation. Following is a discussion regarding the results of the Whitehorse boys and girls.

Gender

Research Question: *What is the prevalence of particular disordered eating behaviors and attitudes in the Whitehorse students according to gender?*

Maturity Fears, Interpersonal Distrust, Impulse Regulation, Social Insecurity, and *Perfectionism* were the most frequently scored scales above the cutoff. Boys and girls differed in the frequency with which they scored above the cutoff on the scales *Drive for Thinness, Body Dissatisfaction, Bulimia,* and *Interoceptive Awareness*. Greater numbers of girls were above the cutoff on the scales *Drive for Thinness* and *Body Dissatisfaction*; and greater numbers of boys were above the cutoff on the scales *Bulimia* and *Interoceptive Awareness*. On the *Drive for Thinness* scale, 7% of the girls and 2.8% of the boys scored above the cutoff. On the *Body Dissatisfaction* scale, 24.6% of the girls and 5.7% of the boys scored above the cutoff. These differences were significant at 68% confidence levels.

The differences found with Whitehorse boys and girls on the scales *Drive for Thinness* and *Body Dissatisfaction* are typical of other research findings in which there are more girls than boys identified with clinical and subclinical eating disorders (Garner, 1991). Garner (1991) indicated that there is a great deal of evidence that these scales are valid measures of eating disorders. He described research in which high correlations between eating disorder diagnoses and elevations on these scales were found. In addition, he reported that these scales have been highly correlated with other eating disorder tests such as the EAT and the Bulimic Investigatory Test.

The find that a greater number of boys than girls scored above the cutoff on the *Bulimia* scale was in contrast with research in which girls are usually viewed as more troubled by the bingeing and purging characteristics of this disorder (Garner, 1991). This unusual finding with the Whitehorse boys may be accounted for by attributes of the youth and/or by the test limitations. There were several items on the scale in which youth were asked about excessive eating or/and bingeing behaviors. While completing the questionnaires, several boys stated that they had engaged in excessive eating and asked what their response should be to some of these items. With another explanation in mind, Garner (1991) and other reviewers of the EDI-2 *Bulimia* subscale, such as Beere (1990) and Brookings (1995), have indicated that one of the faults they find with this subscale is that one cannot be certain that the bingeing and purging behaviors are differentiated.

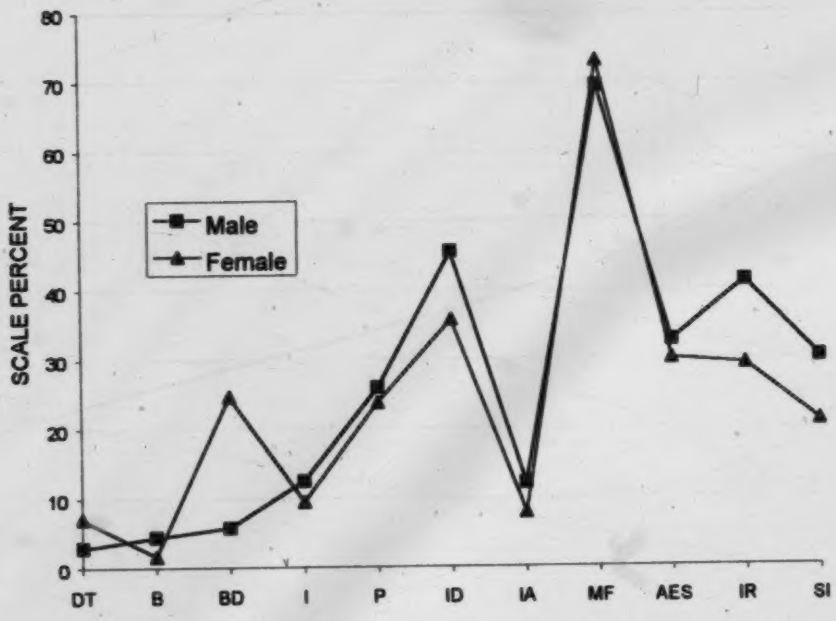
The differences between boys and girls on the EDI-2 were identified as significant at 68% confidence levels on scales: *Drive for Thinness, Bulimia, Body Dissatisfaction, Interpersonal Distrust, Impulse Regulation,* and *Social Insecurity*. Inferences to be made with the entire population of Whitehorse boys and girls in mind, are that they differ on these disordered eating behaviors and attitudes. Note: the cutoff scores cited below in Table 5 are based on the lower limits of Eating Disorder Norm scores reported by Garner (1991). An EDI-2 profile form with these scores is provided in Appendix 7.

Table 5

Students scoring above cutoffs on the EDI-2 subscales

Scale	Cutoff Scores	Total (N=453)		Boys (N=209)		Girls (N=244)	
		f	%	f	%	f	%
Drive for Thinness	≥12	23	5.1	6	2.8	17	7.0
Bulimia	≥9	13	2.9	9	4.3	4	1.6
Body Dissatisfaction	≥14	72	16.0	12	5.7	60	24.6
Ineffectiveness	≥9	48	10.6	26	12.4	23	9.4
Perfectionism	≥7	112	24.8	54	25.8	58	23.7
Interpersonal Distrust	≥4	182	40.4	95	45.4	87	35.6
Interoceptive Awareness	≥8	44	9.7	25	12.0	19	7.8
Maturity Fears	≥3	323	71.7	145	69.3	178	72.9
Asceticism	≥5	141	31.3	68	32.5	73	29.9
Impulse Regulation	≥4	157	34.8	86	41.1	71	29.1
Social Insecurity	≥6	114	25.3	63	30.1	51	20.9

Figure 1: Percentage of boys and girls scoring above the cutoff



Research Question: What is the prevalence of disordered eating behaviors and attitudes in the Whitehorse students according to grade and age?

Grade

The frequency of students categorized by grade who scored above the cutoff are reported in Table 6 and Figure 2. Overall, *Maturity Fears* was the most frequently scored scale by students in all the grades. A greater number of the students in the lower grades scored above the cutoff on this scale; for example, 87% of the grade 8 students scored above the cutoff. In contrast, 67% of the grade 10 students scored above the cutoff. Other frequently scored scales were *Interpersonal Distrust, Impulse Regulation, Aestheticism, Perfectionism,* and *Social Insecurity.*

Students did not score above the cutoff as frequently on the scales *Drive for Thinness, Bulimia,* and *Body Dissatisfaction.* However, the results regarding the *Drive for Thinness* scale were unique. Approximately 5.0 to 6.6% of students in most of the grades scored above the cutoff, except for grade 10 students: only 2.5% scored above the cutoff. *Bulimia* and *Body Dissatisfaction* are noted as more problematic for students in the higher grades. *Bulimia* was scored most frequently by the grade 10 students at 8.7%, and least frequently for grade 7 students at 0.0%. On the *Body Dissatisfaction* scale, 15.9% of all the students scored above the cutoff. The greatest numbers of students scoring above the cutoff on this scale were from grades 11 and 8. These students scored above the cutoff with a frequency of 23.3% and 22.1%, respectively.

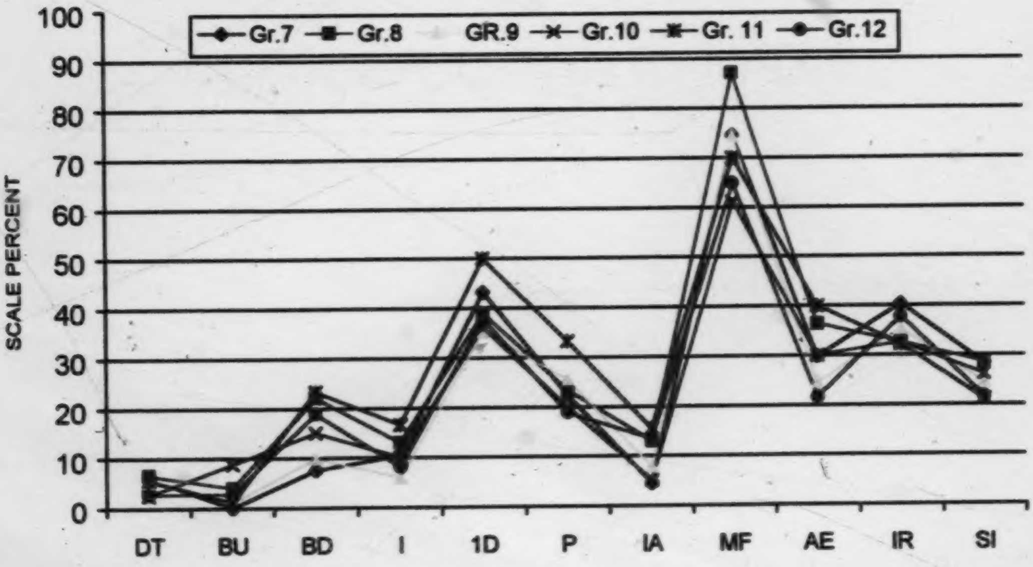
Confidence intervals were examined for the proportion of students scoring above the cutoff on each of the scales. This procedure was conducted to consider the likelihood that the results with these students were applicable to all the Whitehorse youth. The 68% confidence interval was utilized. Significant differences were noted for one or more grades on most of the EDI-2 scales: except for the scales: *Drive for Thinness, Ineffectiveness, Impulse Regulation,* and *Social Insecurity.*

Table 6

Students scoring above EDI-2 Cutoffs According to Grade

	Grade											
	7		8		9		10		11		12	
Scale	f	%	f	%	f	%	f	%	f	%	f	%
DT	4	6.0	5	6.5	6	5.9	2	2.5	5	5.5	1	2.7
BU	0	0	3	3.9	1	1.0	7	8.7	1	1.1	1	2.7
BD	5	7.5	17	22.1	10	9.8	12	15.0	21	23.3	7	18.9
I	7	10.4	10	13.0	6	5.9	8	10.0	15	16.6	3	8.1
ID	29	43.2	30	39.0	35	35.3	29	36.2	45	50.0	14	37.8
P	15	22.4	18	23.4	26	25.5	16	20.0	30	33.3	7	18.9
IA	3	4.5	10	13.0	8	7.8	4	5.0	14	15.5	5	13.5
MF	50	74.6	61	87.0	76	74.5	49	61.2	63	70.0	24	64.9
AE	20	29.8	28	36.4	25	24.5	24	30.0	36	40.0	8	21.6
IR	27	40.3	25	32.5	36	35.3	26	32.5	29	32.2	14	37.8
SI	19	28.3	22	28.6	25	24.5	21	26.2	19	21.1	8	21.6

Figure 2: Percentage of students scoring above EDO cutoff scores according to grade



Age

The frequency of students, categorized by age, who scored above the cutoff are reported in Table 7 and Figure 3. Overall, *Maturity Fears* was most frequently scored above the cutoff for all the age groups. A greater number of younger students scored above the cutoff on this scale; for example, 79% of the 13-year-olds scored above the cutoff. One deviation from this trend was that 75% of 18-year-olds scored above the cutoff. Other scales that were frequently scored above the cutoff were *Interpersonal Distrust, Impulse Regulation, Aestheticism, Perfectionism,* and *Social Insecurity.* The 12- and 16-year-olds scored above the cutoff most frequently on the scale *Interpersonal Distrust*, and the 12- and 18-year-olds scored above the cutoff most frequently on the scales of *Impulse Regulation* and *Social Insecurity*. The age differences for these six scales were significant at the 68% confidence level.

There are not as many students who scored above the cutoff on the scales, *Drive for Thinness, Bulimia,* and *Body Dissatisfaction.* However, the results regarding these scales were examined because Garner (1991) reported that these scales are key eating disorder scales. In addition, differences found with the gender variable on these scales were noticeable. Students between ages 14 to 16 scored more frequently than the other age groups on the *Drive for Thinness* scale. The 16-year-old students scored above the *Bulimia* scale cutoff significantly more often than other age groups. Given the results regarding *Body Dissatisfaction,* it was apparent that older youth experience body image concerns more severely than younger youth: there were increases in frequency identified with each age. For example, greater numbers of 13 - year olds than 11 & 12 - year olds scored above the cutoff, and so on. This trend was evident for youth up to age 16. At this age, there were slight decreases in the frequency of scorers above the cutoff.

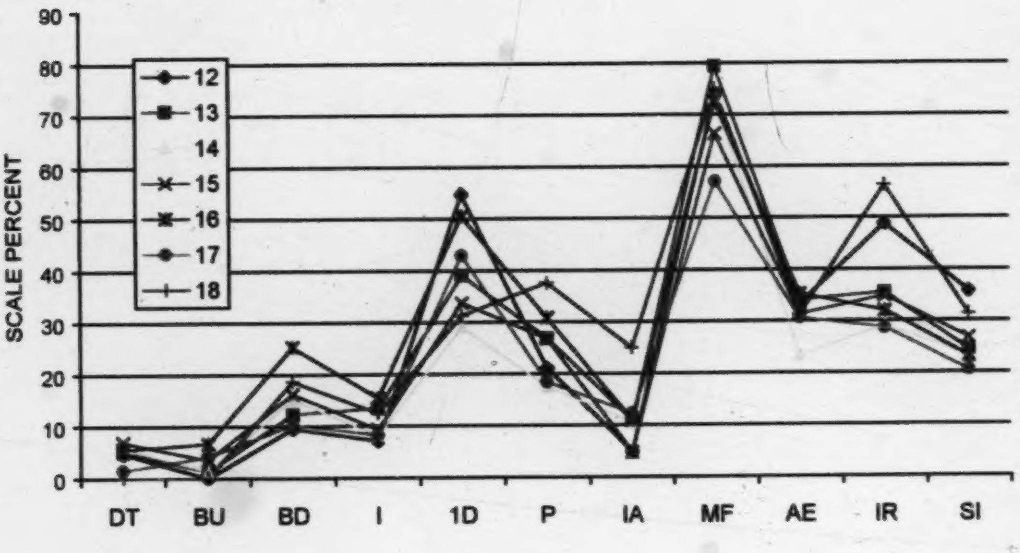
Overall, the age variable results were considered similar to grade variable results. This similarity was not considered problematic or unusual because comparable results were expected, given that, for the most part, the same students were assessed. However, the age and grade results were both examined because of the possibility that there might be age variation in the grades, and because of the need to control for a potential unidentified extraneous variable.

Table 7

Students scoring above cutoff scores according to age

	Age													
	11&12		13		14		15		16		17		18&19	
Scale	**f**	**%**	**f**	**%**	**f**	**%**	**f**	**%**	**f**	**%**	**f**	**%**	**f**	**%**
DT	2	4.7	4	4.9	5	5.8	6	6.9	5	5.5	1	1.5	0	0
BU	0	0	1	1.2	1	1.2	3	3.5	6	6.6	2	4.1	0	0
BD	4	9.5	10	12.2	13	15.1	14	16.2	23	25.3	5	10.2	3	18.6
I	3	7.1	11	13.4	7	8.1	8	9.3	14	15.4	4	8.2	2	12.5
ID	23	54.7	32	39.0	25	29.1	29	33.7	46	50.5	21	42.9	5	31.3
P	9	21.0	22	26.8	15	17.4	23	26.7	28	30.8	9	18.4	6	37.5
IA	2	4.8	9	10.9	9	10.5	4	4.7	10	10.9	6	12.2	4	25.0
MF	32	74.0	65	79.3	63	73.3	57	66.3	66	72.5	28	57.1	12	75.0
AE	14	33.3	28	34.1	20	23.3	27	31.3	32	35.2	15	30.6	5	31.3
IR	21	48.8	29	35.4	25	29.1	30	34.8	29	31.9	14	28.6	9	56.3
SI	15	35.7	20	24.4	20	23.3	23	26.7	21	23.1	10	20.4	5	31.3

Figure 3: Percentage of students scoring above EDO cutoff scores according to age



Research Question: What is the prevalence of disordered eating behaviors and attitudes in each Whitehorse ethnic background student groups?

Research Question: What is the prevalence of disordered eating behaviors and attitudes in the Whitehorse First Nations youth?

Ethnic Background

The frequency of students, categorized by ethnic background, who scored above the cutoff are reported in Table 8 and displayed in Figure 4. *Maturity Fears* was the scale that was scored above the cutoff most frequently for all the ethnic groups. Other frequently scored scales were *Interpersonal Distrust, Impulse Regulation, Aestheticism, Perfectionism,* and *Social Insecurity*. The youth that indicated Canadian/Asian background, scored most often above the cutoff scores on many of the scales. On scales such as *Body Dissatisfaction, Bulimia,* and *Drive for Thinness,* they scored above the cutoff at least 2 to 3 times more often than the other groups.

Aboriginal youth were discussed at length in the literature review because they represent a large minority group in Whitehorse. The Aboriginal youth in Whitehorse who participated in this research indicated two alternate backgrounds: Aboriginal with or without other ethnic background. According to the results of the analysis, both of these Aboriginal ethnic groups were somewhat similar to each other, and to the other student ethnic background groups.

The 68% confidence interval analysis was applied to these findings regarding the students categorized according to ethnic background. For the most part, there were significant differences between one or more of the ethnic groups with the Asian Canadian group on the EDI-2 scales except for *Maturity Fears*.

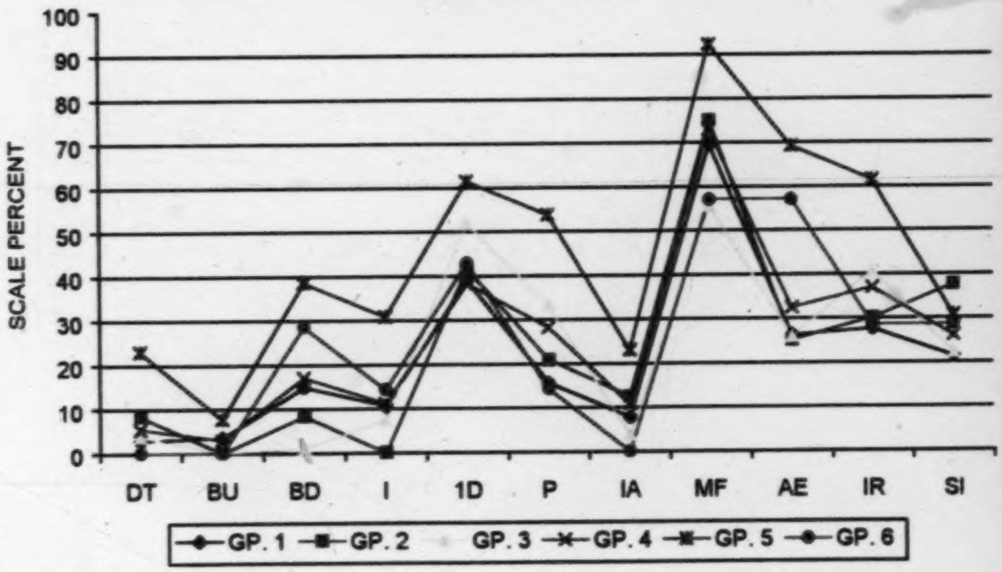
Table 8

Students scoring above Eating Disorder Norm cutoff scores according to ethnic background

	Ethnic Group											
	1		2		3		4		5		6	
Scale	f	%	f	%	f	%	f	%	f	%	f	%
DT	4	2.8	2	8.3	1	3.7	13	5.4	3	23.0	0	0
BU	5	3.5	0	0	0	0	7	2.9	1	7.7	0	0
BD	21	14.9	2	8.3	1	3.7	41	17.0	5	38.5	2	28.6
I	15	10.6	0	0	2	7.4	27	11.2	4	30.8	1	14.3
ID	55	39.0	10	41.6	14	51.9	92	38.2	8	61.5	3	42.9
P	22	15.6	5	20.8	9	33.3	68	28.2	7	53.8	1	14.3
IA	11	7.8	3	12.5	1	3.7	26	10.8	3	23.0	0	0
MF	98	69.5	18	75.0	15	55.5	176	73.0	12	92.3	4	57.1
AE	37	26.2	6	25.0	7	25.9	78	32.4	9	69.2	4	57.1
IR	39	27.6	8	30.0	11	40.7	89	36.9	8	61.5	2	28.6
SI	30	21.3	9	37.5	6	22.2	63	26.1	4	30.7	2	28.6

Note: The groups of students categorized by ethnic background were as follows: Group 1: students indicating Canadian with no other ethnic background, Group 2: students indicating Aboriginal Canadian with no other ethnic background, Group 3: students indicating Aboriginal Canadian with another ethnic background, Group 4: students indicating Canadian with European ethnic background, Group 5: students indicating Canadian with Asian ethnic background, and Group 6: students indicating Canadian with African ethnic background.

Figure 4: Percentage of students scoring above EDO cutoff scores according to ethnic background



Research Question: What is the prevalence of disordered eating behaviors and attitudes in students categorized according to the percentage of ethnic food in their diets?

Ethnic Diet

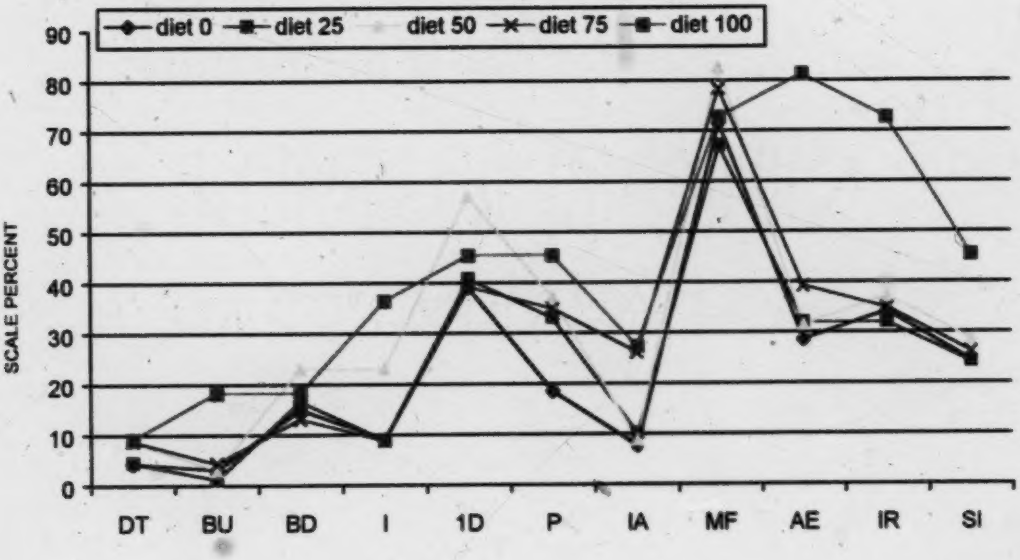
The frequency of students, categorized by percentage of ethnic diet, who scored above the cutoff, are reported in Table 9 and displayed in Figure 4. *Maturity Fears* was the scale scored most frequently above the cutoff for all the ethnic diet groups. The group of students indicating 100% ethnic diet scored most frequently above the cutoff on all of the scales except for *Body Dissatisfaction*. The student group indicating 50% ethnic diet scored more frequently above the cutoff on this scale. Because of the unusual results found with the 100% ethnic diet group, their EDI-2 profiles and demographic data were re-examined. It was apparent that two of these students did not understand the question of ethnic diet: they indicated Canadian/no other ethnic background yet reported to 100% ethnic diet. Their contradictory responses to the questions regarding ethnic background and percentage of ethnic food in the diet could possibly have distorted the results, particularly because there were few students in this group. Nevertheless, given these results, one might conclude that ethnic diet is not a protective factor against eating disorders and is possibly a risk factor. To support this conclusion, it was also noted that the groups of students who reported increasingly higher percentages of ethnic food in the diet, there were corresponding increases in frequency of scorers above the cutoff.

The 68% confidence level analysis was performed with these results. For the most part, the ethnic diet groups of students varied on the EDI-2 scales: in particular, youth reporting to 0-25% ethnic diet scored significantly less frequently above cutoffs than did the youth reporting to 100% ethnic diet.

Table 9
Students scoring above Eating Disorder Norm cutoff scores according to percentage of ethnic food in the diet

	Percentage of ethnic food in the diet									
	0%		25%		50%		75%		100%	
SCALE	f	%	f	%	f	%	f	%	f	%
DT	12	4.2	4	4.4	3	8.6	2	8.7	1	9.1
BU	9	3.1	1	1.1	1	2.9	1	4.3	2	18.2
BD	43	14.9	15	16.5	8	22.9	3	13.0	2	18.2
I	26	9.0	8	8.8	8	22.9	2	8.7	4	36.4
ID	110	38.2	37	40.7	20	57.1	9	39.1	5	45.4
P	53	18.4	30	33.0	13	37.1	8	34.8	5	45.4
IA	22	7.6	9	10.0	3	8.6	6	26.1	3	27.3
MF	206	71.5	61	67.0	29	82.6	18	78.3	8	72.7
AE	82	28.5	29	31.9	11	31.4	9	39.1	9	81.2
IR	99	34.2	29	31.9	13	37.1	8	34.8	8	72.7
SI	70	24.3	22	24.1	10	28.6	6	26.1	5	45.4

Figure 5: Percentage of students scoring above EDO cutoff scores according to percentage of ethnic diet



Research Question: What is the prevalence of disordered eating behaviors and attitudes in Whitehorse students who must leave their families and communities to attend high school?

Residence

The frequency of students, categorized by residence, who scored above the cutoffs are reported in Table 10 and displayed in Figure 6. *Maturity Fears* was the scale most frequently scored above the cutoff. As well, both groups scored frequently above the cutoff on the scales: *Interpersonal Distrust, Impulse Regulation,* and *Aestheticism.* Obvious differences between the two 'residence' groups were noted. On the scales *Drive for Thinness* and *Bulimia,* the students living away from family and community scored above the cutoff twice as often as those living at home. They also scored above the cutoff more frequently on the other scales, with the exception of their lower frequencies on the *Body Dissatisfaction* scale. Initial speculation regarding the findings of this analysis is that the lack of social supports usually associated with family and community may put these students more at risk for developing eating disorder behaviors and attitudes.

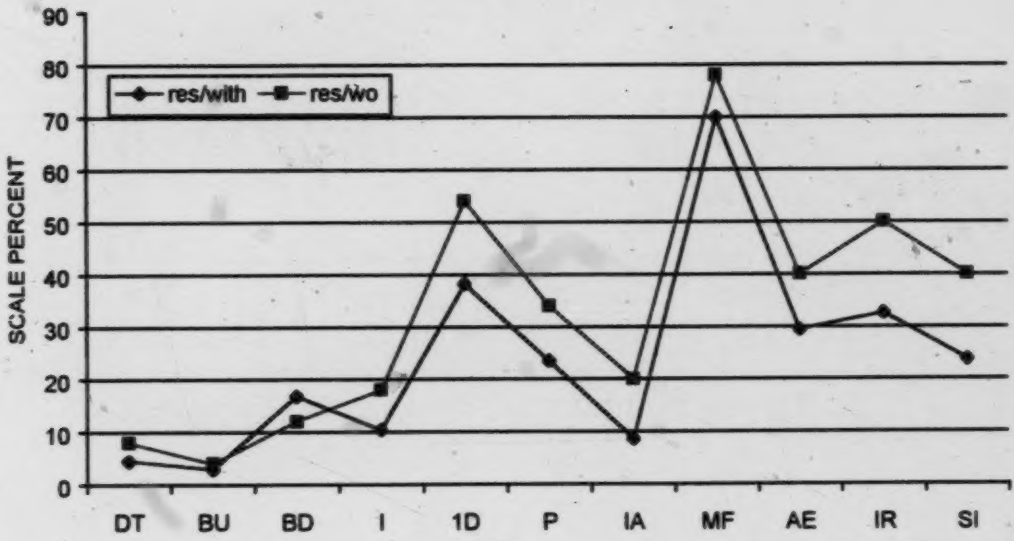
Confidence intervals at 68% were analyzed for differences between students on the variable of residence. Significance was identified on most of the EDI-2 scales except for *Drive for Thinness, Bulimia, Maturity Fears* and *Aestheticism.*

Table 10

Students scoring above EDO cutoff scores according to residence

	Residence: family & community					
	With		Without		Total	
SCALE	F	%	F	%	F	%
DT	17	4.5	4	8.0	21	5.0
BU	11	2.9	2	4.0	13	3.1
BD	63	16.8	6	12.0	69	16.3
I	39	10.4	9	18.0	48	11.3
ID	143	38.2	27	54.0	170	40.1
P	88	23.5	17	34.0	105	24.8
IA	32	8.6	10	20.0	42	9.9
MF	262	70.0	39	78.0	301	71.0
AE	110	29.4	20	40.0	130	30.7
IR	122	32.6	25	50.0	147	34.7
SI	89	23.8	20	40.0	109	25.7

Figure 6: Percentage of students scoring above cutoff scores according to residence



Discussion of EDI-2 Scales Frequently Scored Above the Cutoff

Large numbers of Whitehorse students scored above the cutoff scores on the EDI-2 scales: *Maturity Fears, Interpersonal Distrust*, and *Impulse Regulation*. There are two explanations for this find. First, the disordered eating behaviors and attitudes characterized on these scales are difficulties common to Whitehorse youth. A second explanation is that students might not have been effectively differentiated with these scales.

The results regarding the *Drive for Thinness, Bulimia,* and *Body Dissatisfaction* scales were examined for each of the groups because Garner had reported that these were important scales involved in the identification of an eating disorder. Gender results on these scales were that girls exceeded boys on the *Drive for Thinness* and *Body Dissatisfaction* scales and boys exceeded girls on the *Bulimia* scale. The results for the age and grade variables on these scales were comparable to each other. There were increases in the frequency with which the scales *Body Dissatisfaction* and *Drive for Thinness* were scored above the cutoff for students in the older ages and higher grades. In particular, students up to age 16 and grade 10 scored above the cutoff more frequently. There were slight decreases in the numbers of older students above the cutoffs on these scales. For the most part, this find is in keeping with research in which it is reported that eating disorder behaviors and attitudes are greater for older than they are for younger teens (Story, Rosenwinkel, Himes, Resnick, Harris & Blum, 1991).

There were unusual findings in the analysis of ethnic background and percentage of ethnic food in the diet. Aboriginal Canadian students did not vary significantly from other groups except for a slightly higher frequency of scorers above the cutoff on the *Social Insecurity* scale. Asian Canadians students scored above the cutoff scores most frequently on many of the scales, as did those students with 100% ethnic diet. There was no association between these two groups; students indicating 100% ethnic diet came from a range of ethnic backgrounds. However, a tendency was noted: As the percentage of ethnic food in the diet increased, the frequency of scorers above the cutoff increased. There was one exception to this pattern. For the students indicating 75% ethnic diet, there were fewer scorers above the cutoff. A potential conclusion regarding these finding is that, for the most part, with greater amounts of ethnic food in the diet, there are more instances of disordered eating behaviors and attitudes. Following from this conclusion, ethnic diet might be perceived a risk factor as opposed to a protective factor against eating disorders.

Findings regarding the variable "residence," were that students that left home and community to attend school scored more frequently above the cutoff scores on most of the EDI-2 scales. A possible explanation for this finding was that these students may lack the nutritional and social/emotional benefits of family and community and thus may be more at risk for disordered eating behaviors and attitudes.

Overall, differences were noted for groups of students categorized by gender, age, and grade on scales such as *Drive for Thinness, Body Dissatisfaction,* and *Bulimia*. On the variables of ethnic background, ethnic diet, and residence, the Asian Canadian students, the students reporting 100% ethnic diet, and the students who reside away from home and community scored above the cutoff more frequently on several of the EDI-2 scales.

Research Question: How do the disordered eating behaviors and attitudes in the Whitehorse youth compare to youth groups who live in larger and centralized southern Canadian and American centres?

Comparisons of Whitehorse and Ontario Youth: t-tests

The Canadian youth group used for this comparison included younger aged participants assessed by Shore & Porter (1990). Selected from the schools in Windsor and Essex County, Ontario, the girls and boys who participated were between the ages of 11 to 13, and 14 to 18. Overall findings with the t-tests results were that the Whitehorse youth had less disordered eating behaviors and attitudes than the Ontario youth. The majority of Whitehorse boys and girls significantly exceeded the Ontario boys and girls on only one of the scales, *Maturity Fears* ($p<.05$). Whitehorse girls between the ages of 14 to 18 had a non-significantly higher mean on this scale ($p=.123$).

Further differences between the Whitehorse and Ontario youth were evident when age and gender were considered. On the scales *Drive for Thinness, Bulimia, Body Dissatisfaction, Ineffectiveness, Perfectionism*, and *Interoceptive Awareness,* the older Whitehorse girls had significantly lower mean scores than the same-aged Ontario girls ($p<.05$). The younger Whitehorse girls showed similar differences when compared to their same-aged Ontario group girls; however, they had a non-significant, slightly lower mean on the *Perfectionism* scale. For the most part, it appeared that the disordered eating behaviors and attitudes characterized on these EDI-2 scales were less problematic for Whitehorse girls.

The results regarding the t-tests of the boys were interesting because of differences identified between the younger and older boys. The Whitehorse boys between the ages 11 to 13 had lower means than the same-aged Ontario boys on most EDI-2 scales. Their means were significantly lower on the scales *Drive for Thinness, Body Dissatisfaction,* and *Perfectionism* ($p<.05$), and non-significantly lower on the scales *Bulimia, Ineffectiveness, Interoceptive Awareness,* and *Interpersonal Distrust.* Older Whitehorse boys also had lower means than the older Ontario boys on some of the scales, however their mean differences were significant for only one scale, *Perfectionism (*$p=.0001$*).* On many of the scales, the older boys in both of the groups were similar. On three of the scales, *Bulimia, Body Dissatisfaction,* and *Ineffectiveness,* the older Whitehorse boys had non-significantly higher means than the older Ontario boys had. On the scales *Drive for Thinness, Perfectionism, Interpersonal Distrust*, and *Interoceptive Awareness,* the older Whitehorse boys had non-significant lower means. Both age groups of Whitehorse boys had significantly higher mean scores on the *Maturity Fears* scale (p<.05), and non-significantly higher mean scores on the *Bulimia* scale than the Ontario boys.

Table 11

EDI-2 T-Tests Results of Whitehorse and Ontario High School Girls

	Ages 11-13					Ages 14-19				
EDI-2 SCALE	Ontario Mean N=183	Sample Mean N=69	Mean Diff.	t*	p	Ontario Mean N=231	Sample Mean N=175	Mean Diff.	t**	p
DT	6.6	3.0	-3.5	-6.7	.000	7.1	3.4	-3.6	-11.5	.000
B	1.9	.90	-1.0	-5.0	.000	2.2	1.3	-0.9	-5.1	.000
BD	8.4	6.4	-2.0	-2.4	.017	12.1	8.8	-3.2	-5.8	.000
I	3.9	2.7	-1.2	-2.5	.015	4.2	2.9	-1.2	-3.8	.000
P	4.8	4.7	-0.1	-0.3	.764	5.0	4.1	-0.9	-3.2	.001
ID	4.7	3.8	-0.9	-2.0	.053	3.4	3.0	-0.3	-1.3	.187
IA	5.0	2.8	-2.3	-5.7	.000	5.5	2.8	-2.7	-8.4	.000
MF	4.3	6.5	2.2	3.9	.000	3.8	4.1	0.3	1.5	.123

*Degrees of Freedom=68 **Degrees of Freedom=174

Table 12

EDI-2 T-Tests Results of Whitehorse and Ontario High School Males

	Ages 11-13					Ages 14-19				
EDI-2 SCALE	Ontario Mean N=133	Sample Mean N=54	Mean Diff.	T*	p	Ontario Mean N=63	Sample Mean N=152	Mean Diff.	t**	p
DT	6.6	3.0	-3.6	-4.2	.000	2.1	1.7	-0.4	-1.5	.122
B	1.6	1.2	-0.4	-1.4	.152	2.0	2.2	0.2	0.7	.489
BD	4.7	2.8	-1.8	-3.6	.001	3.9	3.9	1.3	.003	.998
I	3.2	2.8	-0.3	-0.6	.536	2.7	3.0	0.3	0.7	.497
P	5.4	4.3	-1.1	-2.4	.022	5.9	4.7	-1.1	-3.5	.001
ID	4.2	4.0	-0.2	-.341	.735	4.6	4.0	-0.6	-1.8	.072
I A	3.7	2.8	-0.9	-1.5	.135	3.5	2.9	-0.6	-1.4	.152
MF	3.9	5.5	1.6	2.7	.010	3.9	5.0	1.1	3.4	.001

*Degrees of Freedom=53 **Degrees of Freedom=151

Further comparisons of Whitehorse and Ontario students' t-tests results were achieved by representing differences in the students' mean scores as ratios. These means and ratios are depicted in Table 13. Ontario girls between the ages of 14 and 18 years had mean scores on the *Drive for Thinness* and *Body Dissatisfaction* scales that were 3 times higher than the same-aged Ontario boys' mean scores. In contrast, the 14-18 year-old Whitehorse girls' means were only 2 times higher than same-aged Whitehorse boys' means. Thus, it appeared that gender differences were greater for the Ontario students on these disordered eating behaviors and attitudes. One anomaly was noted regarding this 14 to18 year - old age group: on the *Bulimia* scale the Whitehorse boys had 2 times higher means than did the Whitehorse girls, whereas with the Ontario youth there were no such differences. For the both the Whitehorse and Ontario boys and girls between the ages of 11 to 13 years, the means were similar enough so that one-to-one ratios were applicable. This was apparent on all the scales except on *Body Dissatisfaction*, the girls had 2 times higher means that did the boys.

Gender differences identified with the ratios were comparable to those found with the frequency analyses of scorers above the cutoff. There were 3 times more girls than boys that scored above the cutoff on the *Body Dissatisfaction* scale, and 2 times more girls than boys that scored above the cutoff on the *Drive for Thinness* scale. Furthermore, there was double the amount of boys than girls who scored above the cutoff on the *Bulimia* scale.

Table 13

Ratio Comparisons of the Mean scores of Whitehorse and Ontario Youth on each EDI-2 scale

	Group: Ages 11-13						Group: Ages 14-19					
	Ontario Sample			Whitehorse Sample			Ontario			Whitehorse Sample		
SCALE.	Boys	Girls	Ratio	Boys	Girls	Ratio	Boys	Girls	Ratio	Boys	Girls	Ratio
DT	6.6	6.6	1:1	3.0	3.0	-1:1	2.1	7.1	1:3	1.7	3.4	1:2
BU	1.6	1.9	1:1	1.2	0.9	1:1	2.0	2.2	1:1	2.2	1.3	2:1
BD	4.7	8.4	1:2	2:8	6.4	1:2	3.9	12.1	1:3	3:9	8.8	1:2
I	3.2	3.9	1:1	2:8	2.8	1:1	2.7	4.2	1:2	3.0	2.9	1:1
P	5.4	4.8	1:1	4:3	4.7	1:1	5.9	5.0	1:1	4.7	4.1	1:1
ID	4.2	4.7	1:1	4:0	3:8	1:1	4.6	3.4	1:1	4.0	3.0	1:1
IA	3.7	5.0	1:1	2.8	2.8	1:1	3.5	5.5	1:1	2.9	2.8	1:1
MF	3.9	4.3	1:1	5.5	6.5	1:1	3.9	3.8	1:1	5:0	4:1	1:1

It is helpful to review the results regarding the subscale *Maturity Fears* here. As noted with the earlier analysis, many students scored above the cutoff on this scale. There were two explanations suggested: (1) that maturity fears were a concern for the Whitehorse youth, and (2) that selected cutoff score was too low. Both explanations may be applicable. However, it is interesting to note that in the t-tests results the means of the Whitehorse youth on this scale were significantly higher than the Ontario youth means. Thus, it appears that maturity fears may in fact be a concern of the Whitehorse youth.

All together, the t-tests results and the ratio comparisons are considered evidence that the youth in Whitehorse have less eating disorder concerns than the Ontario youth. In view of these findings one might describe the advantages and disadvantages for youth that live in Whitehorse: On the positive side, youth in Whitehorse may have been less exposed than youth in southern Canada to influences such "ideal body image." The Whitehorse youth acknowledged fewer psychological concerns around eating and body image. On the negative side, they appeared to have heightened maturity fears. This might be attributed to the fact that the youth in Whitehorse have less accessibility and familiarity with mainstream society than youth in more centralized and urban centers. In addition, they could have fears regarding the consequences of 'maturation.' For many Whitehorse youth, it may be that they have to leave the Yukon for further education and employment. This speculation seems feasible when one notes that the means on *Maturity Fears* were higher for Whitehorse youth than the Ontario youth. Also, in the cutoff analysis results, maturity fears were identified as a concern for the younger students as well as for some older students who might be considering post-high-school options.

Comparisons of Whitehorse and American Youth: t-tests

The American youth group used for this comparison was cited in the manual as a norm group because the results from the research conducted with them was used for establishing EDI- 2 norms for youth between grades 9 to 12. To develop these norms, Rosen, Silberg & Gross (1988) acquired normative data on a large and diverse sample of adolescents of different ages, races and SES levels. The youth were drawn from the student bodies of schools in towns and cities in northeastern United States. There were 675 girls and 698 boys who participated in this research.

The overall findings with the t-tests results were that the Whitehorse youth had less disordered eating behaviors and attitudes than the American youth. When both boys and girls were considered the Whitehorse students had significantly lower means than the American students on the EDI-2 scale: *Perfectionism* ($p<.05$). In addition, Whitehorse boys and girls had significantly higher means the American boys and girls on the scales, *Maturity Fears* ($p<.05$). The find regarding greater *Maturity Fears* in the Whitehorse youth was found in the other analyses, the t-tests comparisons with Ontario youth and with the frequency analysis.

Table 14

EDI-2 T-Tests Results of Whitehorse and American High School Students

	Males					Females				
EDI-2 SCALE	Amer. Mean N=698	Sample Mean N=209	Mean Diff.	t *	df**	Amer. Mean N=675	Sample Mean N=244	Mean Diff.	t*	df**
DT	1.7	1.6	0.1	0.4	265	5.6	3.3	2.3	6.5	426
B	1.2	1.9	-0.7	3.7	1041	2.1	1.2	0.9	4.7	690
BD	4.3	3.6	0.7	1.7	322	11.3	8.1	3.2	3.0	936
I	2.8	2.9	-0.1	0.5	168	4.2	2.8	1.4	4.3	59
P	5.8	4.6	1.2	3.5	87	5.2	4.2	1.0	3.4	47
ID	3.9	3.9	0.0	-0.1	328	3.6	3.3	0.3	1.1	892
IA	2.5	2.9	-0.4	-0.3	208	4.5	2.7	1.8	5.7	869
MF	3.6	5.5	-1.9	2.8	315	4.2	4.8	-0.6	2.2	582

*Note: $p<.05$, **Note: Degrees of freedom calculated with Welch's formula (Glass & Hopkins, 1996)

Differences with particular EDI-2 scales were evident when gender was considered. Whitehorse girls had significantly lower mean scores than the American girls ($p<.05$) on the scales, *Drive for Thinness, Body Dissatisfaction*, *Ineffectiveness, Bulimia,* and *Interoceptive Awareness*. There was no significant difference found on the *Interpersonal Distrust* scale. Overall, it appeared that disordered eating behaviors and attitudes characterized on these EDI-2 scales were less problematic for Whitehorse girls.

The Whitehorse boys had significantly higher mean scores on the *Bulimia* scale ($p<.05$). There were no significant differences between the two groups of boys on the scales: *Ineffectiveness, Interpersonal Distrust, Drive for Thinness* and *Interoceptive Awareness* and *Perfectionism*. However, it was noted that although significant differences were not apparent on many of these EDI-2 scales, the Whitehorse boys' means were generally lower than the American boys' means. These t-tests results in which the Whitehorse youth were compared to youth in Ontario and in northeastern United States were considered compelling indications that the youth in Whitehorse have less eating disorder concerns than the Ontario and the American youth. There were some differences in the two t-tests analyses. The Ontario sample was considered suitable for the comparisons of youth by age and gender from the ages of 11 to 18+. The American sample was considered suitable because Rosen, Silberg and Gross (1988) tested large numbers of students and included normative data. However, the American youth were drawn from a sample of grades 9 to 12, whereas the Whitehorse youth are from grades 7 to 12. For the most part however, the objective in conducting these analyses was confirmed. It was determined that disordered eating behaviors and attitudes were more prevalent for youth in larger, more centralized areas than the Whitehorse youth.

Summary and Interpretation of Findings Regarding Whitehorse Youth

The primary objective of this research was the identification of the prevalence of disordered eating behaviors and attitudes in the Whitehorse youth. A second, equally important objective was to distinguish what the eating disorder concerns were for the students who were categorized by gender, age, and grade, ethnic background, ethnic diet, and residence. Finally, there was the objective of comparing Whitehorse youth with youth from larger, more centralized areas in Canada and the United States.

To address the primary objective regarding prevalence, there was an analysis of the overall numbers of students that scored above the 75th percentile on each and all of the EDI-2 scales. The 75th percentile cutoff used in this study was based on the EDI-2 norms for high-school students and for eating-disordered persons cited in the EDI-2 manual.

To address the objective regarding disordered eating behaviors and attitudes found in each student group, results were analyzed according to cutoff scores. These cutoff scores were derived from the EDI-2 profile; the low-range scores for eating-disordered persons were used. Confidence intervals were identified for each of the groups' results in order to predict the likelihood that the entire Whitehorse youth differ or score similarly on the EDI-2 scales. In addition, to assess youth from differently populated communities, t-tests were run and analyzed for comparison of the Whitehorse youth with the Ontario and American youth cited in the EDI-2 manual (Shore & Porter, 1990, & Rosen, Silberg & Gross, 1986).

Prevalence of Disordered Eating Behaviors and Attitudes with the Whitehorse Youth

Results for boys and girls were examined by 3 sets of data, the profile analyses, the frequency of scorers above cutoffs and the t-tests results. The students' EDI-2 profiles were examined to investigate prevalence of disordered eating attitudes and behaviors. The number of students scoring above the 75th percentile on 0-8 EDI-2 subscales was identified based on high school norms from the Rosen, Silberg & Gross (1988) research. There were a small percentage of students that had elevated scores on several of the scales. There were more boys than girls who exhibited disordered eating behaviors and attitudes. It was found that 2.4% of the boys and 1.6% of the girls scored above the 75th percentile on all eight subscales. This find was well below the rate identified by other researchers that used eating disorder questionnaires to measure propensity for an eating disorder (Stice, Mazotti, Krebs & Martin, 1998 & French, Story, Downes, Resnick & Blum, 1995). In addition, these results were contrary to research in which significantly more females than males with eating disorders were found (Garner, 1991; Anderson, 1992 & Attie & Brooks-Gunn, 1989).

The discrepancies between previous research findings and these present findings were addressed by also noting numbers of students with six or more subscale elevations. The rationale for considering the less stringent criteria of fewer elevated subscales was based on the possibility that on some of the EDI-2 scales, such as *Maturity Fears* and *Interpersonal Distrust,* the students may not have been effectively differentiated. Given the criteria of including students above the 75th percentile on six to eight subscales, the numbers were more in keeping with other questionnaire research. With this approach, there were 6.5% of the girls and 8.6% of the boys who were described as having disordered eating behaviors and attitudes. These numbers were closer to the results reported in other questionnaire research of eating disorders in girls but still exceptionally high for the boys (Anderson, 1992). It is interesting to note that whether prevalence was identified based on the eight or six to eight subscales, the prevalence for the boys exceeded the prevalence for the girls by at least a 2% higher rate of disordered eating behaviors and attitudes.

The greater rate of disordered eating behaviors and attitudes found in the boys may be accounted for in a few ways. First, it is possible that these Whitehorse adolescent males actually had a wide range of eating-disordered behaviors and attitudes. Second, because adolescent males have generally been depicted as more susceptible to externalizing disorders such as conduct disorder and delinquency, the EDI-2 scales may have been measuring some of these more common concerns. In support of this latter possibility, Garner (1991) indicated that some of the items on the EDI-2 scales overlap with other psychological problems.

When the results were analyzed for the number of students falling above the 75th percentile on the 11 subscales based on norms for people with eating disorders, a similar pattern between the boys and girls was apparent. There were 2.0% of the boys and 1.2% of the girls who scored above the 75th percentile on the 6 to 11 subscales. Interestingly, when only six subscales were used as a criterion cutoff for the eating disorder norms, girls were identified as scoring above the cutoff slightly more often, at .4%, than the boys at 0%. Laverty (1995) reported a parallel differential between males and females when fewer EDI-2 scales were considered. This pattern could likely be attributed to girls' fewer overall psychological problems and more specific disordered eating behaviors and attitudes. Given this potential explanation, girls' disordered eating behaviors and attitudes can be identified when fewer subscales are considered. In a similar line of reasoning, when a greater number of scales are analyzed, it is likely that the results regarding Whitehorse boys might be explained by a more diverse range of psychological concerns that overlap with eating disorder problems. Another way of describing these results is that boys exhibited more overall dysfunctional behavior that can be identified in a variety of psychological problems, whereas the girls demonstrated more specific psychological concerns that centered around body image and related eating disorder concerns.

To further address the question regarding the prevalence of disordered eating behaviors and attitudes in Whitehorse youth, the results from the scales *Drive for Thinness, Body Dissatisfaction,* and *Bulimia* were utilized to shed light on the unusual findings of a greater male prevalence. To perform this analysis the percentages of students scoring above EDI-2 cutoff scores and the students' means were converted into ratios. The means utilized in this analysis are documented in Appendix 6. Table 15 was included below to portray the ratios derived from each of the analyses.

Essentially, in this ratio comparison, the differentiation of the boys and girls on the scales *Drive for Thinness* and *Body Dissatisfaction* more closely resembled existing research in which eating disorders and disordered eating behaviors and attitudes were found more problematic for females. The ratio was reversed with the *Bulimia* scale results. Boys scored above the cutoff twice as often, and had higher means than the girls. The higher number of boys' difficulties that were depicted in the *Bulimia* scale may be accounted for by items regarding bingeing. Many boys while completing the questionnaire reported aloud their accounts of excessive eating and queried about how they should reply. Garner (1991) and other reviewers of the EDI-2 *Bulimia* subscale have indicated that one of the problems with this subscale is that there may be ineffective differentiation between bingeing and purging behaviors. It is yet unclear whether the results regarding this scale were affected by a potential test limitation or they were characteristic of the boys' overeating behavior. Shore and Porter (1990) and Rosen, Silberg and Gross (1986) did not report significant findings with boys on the *Bulimia* scale, however Laverty (1995) reported that 33% of the males in her study scored above the 75th percentile on the *Bulimia* scale.

Table 15

Ratio Differences between Whitehorse Boys and Girls

	Percentage Above Cutoff Scores				Mean Scores			
	Total	Boys	Girls		Total	Boys	Girls	
	%	%	%	Ratio	M	M	M	Ratio
DT	5.1	2.8	7.0	1:3	2.54	1.6	3.3	1:2
B	2.9	4.3	1.6	3:1	1.52	2.0	1.1	2:1
BD	16.0	5.7	24.6	1:4	6.08	3.6	8.1	1:2
I	10.6	12.4	9.4	1:1	2.92	2.9	2.8	1:1
P	24.8	25.8	23.7	1:1	4.41	4.7	4.2	1:1
ID	40.4	45.4	35.6	1:1	3.61	3.9	3.2	1:1
IA	9.7	12.0	7.8	2:1	2.83	2.9	2.7	1:1
MF	71.7	69.3	72.9	1:1	4.95	5.1	4.8	1:1
A	31.3	32.5	29.9	1:1	3.83	4.1	3.6	1:1
IR	34.8	41.1	29.1	1:1	3.62	4.5	2.8	2:1

In summary, the prevalence of disordered eating behaviors and attitudes in the Whitehorse youth was identified according to which results were considered: the overall profiles or the results regarding the frequency of scorers above the cutoff on the subscales *Drive for Thinness, Body Dissatisfaction*, and *Bulimia*. When the EDI-2 profile results were consulted, the prevalence in the Whitehorse youth was 1.6% for girls and 2.4% for boys, based on elevations on all eight subscales; and 6.5% for girls and 8.6% for boys, based on six to eight subscale elevations.

When particular EDI-2 scales and the ratios between the two types of analyses used for this research were considered, the disordered eating behaviors and attitudes characterized on the scales *Drive for Thinness* and *Body Dissatisfaction* were more problematic for girls. Furthermore the disordered eating behaviors and attitudes characterized on the *Bulimia* scale were more problematic for boys. This find was more in keeping with research of eating disorders in which greater female prevalence has been found (Garner, 1991). To support some of these findings, similar gender differences have been noted by other investigators of "body dissatisfaction" (Davies & Furnham, 1986 & Eisele, Herstgaard & Light, 1986).

Comparisons of Whitehorse Youth with Ontario and American Youth

As stated earlier, using t-tests results, the Whitehorse youth were compared with the high school groups that were cited in the EDI-2 manual (Shore & Porter, 1990 & Rosen, Silberg & Gross, 1988). It was proposed that there were two key demographic factors involved in differences: the size and the setting of community that the youth lived in. The Whitehorse youth, who live in a small northern city of approximately 19,000 people, were compared to youth from larger, more centralized communities in Ontario, Canada and northeastern United States.

According to the t-test results, youth in Whitehorse reported lower levels of disordered eating behaviors and attitudes than the youth from Ontario and American youth. The only scale in which all the Whitehorse youth significantly exceeded the Canadian and American youth was *Maturity Fears*. It is interesting to note that *Maturity Fears* was also identified as a concern in the data regarding frequency of scorers above cutoffs on the EDI-2 scales.

Initial speculations regarding maturity fears in the Whitehorse youth are first attributed to artifacts of the construct. Garner (1991) indicated that some of the items on this subscale might not be appropriate for youngsters. However, given the stance taken of accepting the data as reflective of these youths' concerns, it is important to consider also the demographic factors of size and setting of a community. Whitehorse youth may experience greater isolation than youth in more centralized locations, and this isolation may exacerbate maturity fears. They may have fewer opportunities than their cohorts have to address potential concerns involving maturation such as expectations of moving away for education and employment as they grow older.

Further scrutiny of the t-tests results allows one to identify age and gender data. The analyses conducted with the Whitehorse and the Ontario youth were consulted for age and gender results. The Whitehorse girls' means were lower on all scales except for a significantly higher mean for *Maturity Fears*. Age comparisons were used to identify further differences. Between the ages 11 to 13, the Whitehorse girls were at a statistically significant lower level on the scales *Drive for Thinness, Bulimia, Body Dissatisfaction, Ineffectiveness*, and *Interoceptive Awareness*. The Whitehorse girls between the ages 14 to 18+ were also lower at a statistically significant level on these scales as well as on the *Perfectionism* scale.

Whitehorse and Ontario boys showed less significant differences on the t-tests results. Whitehorse boys between the ages 11 to 13 had lower means on all the scales except for a significantly higher mean on *Maturity Fears*. Their means were significantly lower for the scales *Drive for Thinness, Body Dissatisfaction,* and *Perfectionism*. The Whitehorse boys between 14 to 18+ years of age had lower means than the Ontario boys at a statistically significant level on the scale *Perfectionism* and a significantly higher mean on the scale *Maturity Fears*. On the remainder of the scales, they had either similar or minimally higher means than the norm group.

It was observed that the results regarding Whitehorse boys from these t-tests analyses and from the profile analysis were complementary. In the profile analysis, it was found that a higher percentage of the boys than girls scored above the 75th percentile on EDI-2 subscales. In the t-tests results, that the older boys had greater eating disorder concerns than younger boys. Further, it was interesting to note that Laverty (1995) found a lower prevalence rate among males and that her sample was based on junior high school students likely aged 11 to 14, whereas this study included males 18+ years of age. Essentially, it appears that disordered eating behaviors and attitudes are more prevalent in the older Whitehorse males than in younger Whitehorse males.

In summary, the t-tests results were utilized to compare Whitehorse youth with other youth groups and to describe the Whitehorse youth population in greater detail. For the most part, Whitehorse females and males had fewer eating disorder concerns than the youth in Ontario and America, although it was found that the 14-18+ year old Whitehorse males had slightly more eating disorder concerns than same-aged Ontario males.

These results might be applied to the general population with the formulation of the conclusion: youth in smaller towns and cities present with fewer eating disorder concerns than youth in larger cities. There are two potential exceptions to this conclusion found with this research. One is that *Maturity Fears* are a greater concern for boys and girls in smaller and less populated communities. The second exception is that older boys have slightly more eating disorder concerns than same-aged males in larger communities. One explanation to consider for this latter discrepancy is that older boys in smaller communities have psychological problems that overlap with dysfunctional eating behaviors and attitudes. In discussions with a local psychologist regarding these unusual findings, it was indicated that more male than female adolescents between the ages of 14 to 18+ have required clinical services (Personal communication from Whitehorse psychologist).

Disordered Eating Behaviors and Attitudes for Groups of Whitehorse Youth

Disordered eating behaviors and attitudes of each of the groups of students classified according to gender, age, grade, ethnic background, ethnic diet, and residence were identified by the results from the analyses of the frequency of scorers above cutoffs on the EDI-2 scales. In addition, 68% confidence intervals were calculated in order to make predictions that the results were significant and representative of Whitehorse youth.

The primary eating disorder concerns common to all the Whitehorse youth were identified as *Maturity Fears, Interpersonal Distrust, Impulse Regulation* and *Aestheticism*. These were the EDI-2 scales most frequently scored above the cutoff. Students differed according to their age, grade, and gender on some of the EDI-2 measures of disordered eating behavior and attitudes. This was especially evident with gender differences on the scales of *Drive for Thinness, Bulimia*, and *Body Dissatisfaction*. Conclusions made regarding the gender differences found were that girls present with significant concerns that are more directly linked to body image and eating disorders whereas boys have overall concerns with eating behaviors and attitudes in which there is overlap with other adolescent psychological concerns.

When the students were classified according to grade and age, they varied on some disordered eating behaviors and attitudes. Younger students presented with greater problems on the scale *Maturity Fears,* and older students had greater problems on the scale *Drive for Thinness*, *Body Dissatisfaction,* and *Bulimia*. These results were in keeping with findings described by researchers who noted the predominance of occurrence of *Bulimia* in the late teens (Garner, 1991; Levine & Smolak, 1998; & Hsu, 1990). As well, researchers have shown that *Body Dissatisfaction* is often considered one of the factors that can lead to an eating disorder in older youth (Schultz & Muir, 1999 & Garner, 1991).

The variables of ethnic background, residence, and ethnic diet were analyzed to determine whether they are protective or risk factors in a student's vulnerability for disordered eating behaviors and attitudes. It was proposed that a larger percentage ethnic food in one's diet is a potential protective factor. This proposal was based on the reasoning that with a more ethnic diet, there is the possibility that there are more nutritionally sound meals and regular family interactions at mealtime. Similar reasoning was applied to speculations regarding the impact of ethnic background on eating disorder concerns. It was suggested that stronger ethnic background identification might help protect a student against "body image" pressures characteristic of our society. There is inconclusive research about the association between ethnicity and eating disorders; however, it appears that the greater the amount of identification with mainstream Western culture, the greater the likelihood of disordered eating behaviors and attitudes (Snow & Harris, 1999 & Allison, 1995).

One's residence was queried to investigate the impact of having to leave home to attend school. This variable was queried because many rural Yukon youth must leave their community to attend school in Whitehorse. Furthermore, in the clinical practice of this researcher, it was found that young college students who were living away from home presented more often with vulnerability for eating disorders. It was submitted that when youth leave home for school, they lack easy access to the social and nutritional benefits of family-served meals. In addition, they may experience loneliness; and if they are having difficulty adjusting and finding a supportive peer group, they may encounter feelings of anomie, especially if they feel isolated from the cultural benefits of their communities. With the potential challenges such youth face, it was suspected that they could become vulnerable to disordered eating behaviors and attitudes.

The frequency analysis results were in keeping with the reasoning stated above. In the analyses of numbers of scorers above the cutoff on the EDI-2 scales *Maturity Fears* was high for both groups. On the scales *Drive for Thinness* and *Bulimia,* the students living away from family and community scored above the cutoff score twice as often as those students living at home.

The results from the frequency analyses were examined for differences between students categorized according to ethnic background and ethnic diet variables. The Aboriginal groups of youth showed no significant differences from the other ethnic groups in the analyses, except that they had higher frequencies of scoring above the cutoff on the *Social Insecurity* scale.

The results from frequency analyses of ethnic diet and background were noted for an unusual pattern. The students reporting to Asian Canadian background and the students reporting to a 100% ethnic diet scored more often than all other groups above the cutoff score on the majority of the scales. The potential relationship between ethnic diet and ethnic background was examined; however, it was found that there was no apparent association between these variables. Students indicating a 100% ethnic diet were from a range of ethnic backgrounds.

Another interesting pattern worth considering was observed in the frequency analysis results regarding ethnic diet. The groups of students that reported higher percentages of ethnic food in their diets also acknowledged more disordered eating behaviors and attitudes. Youth reporting to a 25% ethnic diet had less eating disorder concerns than the youth reporting to a 50% ethnic diet, and these groups of students had less eating disorder concerns than the group with 100% ethnic food in their diets. Essentially, it appeared that as one's percentage of ethnic food in the diet increases, so does one's likelihood of having disordered eating behaviors and attitudes.

There are some explanations to be made regarding the frequency analysis findings for ethnic background and ethnic diet in which differences between the groups were revealed. First, the youth that had a stronger identification with their ethnic background, possibly reflected in a greater amount of ethnic food in the diet, were at greater risk for eating-disorder behaviors and attitudes. One explanation might be that with a greater percentage of ethnic food in the diet, there might also be greater family and cultural control. Control has been cited as an issue in AN, and often family therapy approaches have been used to address this issue (Bruch, 1982, & Pike & Rodin, 1996). For youth who perceive such control as adverse, they may rebel and struggle against this control through one avenue they have authority over, their own bodies. Another explanation to consider is that ethnic background can affect one's selfhood concerns: A youth may need to confront psychological issues such as anomie and identity both within one's own ethnic group and within the majority group and thus be more vulnerable to a range of psychological concerns. Essentially, youth may feel that stronger ethnic identity isolates them from the mainstream adolescents at a time when there is a strong urge to fit in with the group. Youth may opt to engage in disordered eating behaviors and attitudes in order to fit in with their peer groups.

Research limitations were also considered in the interpretation of these ethnic diet and background results. It was apparent that some students did not understand the ethnic diet question; and, thus, there was some distortion with the results of this variable. A final consideration was that ethnic diet is a variable that is unrelated to eating behaviors and attitudes. Ethnic diet might be associated with ethnicity or another factor in a manner that is unidentifiable in this research.

Concluding remarks

In this research, it was found that the prevalence for disordered eating behaviors and attitudes in Whitehorse youth was greater for the boys than for the girls. There were 2.4% of the males and 1.6% of the females who had subscale scores above the 75th percentile on all eight EDI-2 subscales. With the less stringent criteria of six to eight subscales applied, there were 6.5% of the girls and 8.6% of the boys that exhibited disordered eating behaviors and attitudes. Based on these findings, it was premised that there are between 2.4 to 8.6% of Whitehorse boys, and 1.6 to 6.5% of Whitehorse girls who were at risk for developing an eating disorder.

Gender differences were further noted with examination of the results from the other analyses performed in this study. On three of the EDI-2 scales, boys and girls scored significantly differently: *Drive for Thinness, Body Dissatisfaction,* and *Bulimia*. In addition, the girls had higher means and scored more frequently above the cutoff than the boys on the scales *Drive for Thinness* and *Body Dissatisfaction* whereas they had lower means and scored less frequently above the cutoff on the *Bulimia* scale. Essentially, it appeared that the girls' disordered eating behaviors and attitudes were with specific eating, dieting and body image concerns, whereas the boys' disordered eating behaviors and attitudes overlapped with other psychological concerns.

Using t-tests results, Whitehorse youth were identified with less disordered eating behaviors and attitudes than the American and Ontario youth. An overall conclusion was made: youth in smaller and less centralized communities may be less at risk for eating disorders. Some exceptions to this conclusion were evident when gender and age t-tests results between the youth groups were examined: (1) Whitehorse girls and 11-13 year-old Whitehorse boys had fewer eating disorder concerns than the Ontario youth of the same age and gender. (2) Whitehorse boys between ages 14 to 18+ had similar or slightly higher means than the same-age Ontario boys. (3) Whitehorse boys and girls scored significantly higher than the Ontario and American youth on *Maturity Fears*.

Using the analyses of scorers above the cutoff, the role of the variables of gender, age, grade, ethnic diet, ethnic background, and residence in disordered eating behaviors and attitudes was investigated. Generally, with the age and grade variables, similar results were identified. *Maturity Fears* was a concern for all the Whitehorse youth however it was of greatest concern for the younger age-grade groups. *Body Dissatisfaction* was a concern for the older age-grade groups. With respect to the gender variable, boys and girls varied significantly on *Body Dissatisfaction, Drive for Thinness,* and *Bulimia* and varied moderately on *Impulse Regulation*.

There were compelling and unexpected results identified with the variables of ethnic background, ethnic diet, and residence. A significant number of students who lived away from home scored above the cutoff on all EDI-2 eating disorder scales except for *Body Dissatisfaction*. Youth that acknowledged a greater amount of ethnic diet also acknowledged greater disordered eating behaviors and attitudes. Finally, Asian Canadian youth were identified as more likely to have disordered eating behaviors and attitudes than the other ethnic background groups.

In the following chapter, there is further discussion of these results, the implications of the results, and how the results can be applied to potential prevention programs. In addition, limitations of this research are reviewed, and suggestions for further research are provided.

Chapter V: Summary

In this final chapter, implications of the results of this study and suggestions for further research are presented. The findings are discussed in light of the existing research and applied to models of eating disorder prevention and intervention. In addition, limitations of the study are reviewed with recommendations for further research.

Overview of the Study Objectives

This study was conducted to investigate the prevalence of disordered eating behaviors and attitudes in the Whitehorse youth. Also examined were the factors of gender, age, grade, ethnic background, ethnic diet, and residence in order to ascertain whether or not the students, when categorized into these groups, differed on the EDI-2 measures of disturbed eating behaviors and attitudes. Finally, the Whitehorse youth were compared to the youth in larger, more centralized communities in southern Ontario and northeastern United States. Essentially, the objective was to determine the degree of and factors involved in occurrences of disordered eating behaviors and attitudes in the Whitehorse youth.

Overview of Study Methods

EDI-2 questionnaires were administered to 454 Whitehorse high school students who participated in the eating disorder classes provided by this researcher. Students were gathered from all the high schools in Whitehorse and were considered representative of the overall youth population, which consisted of approximately 2700 students. The results were analyzed by counting numbers of students scoring above predetermined cutoff levels and by the statistical analyses of t-tests.

Implications of the Data Results

The findings of this research were considered important for several reasons. There were important because the prevalence of disordered eating behaviors and attitudes in the Whitehorse youth was determined. In addition, although the research only involved Whitehorse youth, it was the first study of the prevalence of disordered eating behaviors and attitudes conducted with Northern Canadian youth. Furthermore, the Whitehorse youth were compared to youth from larger and more centralized settings in southern Ontario and northeastern United States. Consequently, this researcher was able to describe the degree of concern for youth in Whitehorse as well as compare them to other youth. Essentially, it was found that some of the Whitehorse youth had disordered eating behaviors and attitudes, but not to the degree as did youth in larger, more centralized settings. This find was considered an addition to the existing data regarding youth in urban and semi-urban and rural settings. Credence was added to the contention that the sociocultural influences in more urbanized settings are associated with greater degrees of disordered eating behaviors and attitudes. A unique research question was generated from these results: because Whitehorse is a small community as well as an isolated community; in further research efforts one might want to compare youth in small community settings with varying degrees of isolation.

The research was also considered valuable because of the analysis of the youth categorized by age, grade, gender, ethnic background, ethnic diet and residence. This was considered an opportunity to identify groups of youth that might require specific intervention, as well as an opportunity to consider the potential association between these variables and disordered eating behaviors and attitudes. In conducting analyses with these variables, unique research questions that had not been previously investigated in eating disorder research, such as the role of ethnic diet and residence with respect to disordered eating behaviors and attitudes were addressed. In addition, questions regarding the extent of disordered eating behaviors and attitudes in Aboriginal youth were addressed: Whitehorse was considered an ideal setting to pursue this question because of the large proportion of First Nations people in Whitehorse and the Yukon. Finally, research questions that have been previously investigated such as disordered eating behaviors and attitudes of youth categorized by age and gender were addressed and conceived as an opportunity to add to existing data regarding these variables. Essentially, findings regarding the Whitehorse youth categorized into groups, could be applied to answering and generating research questions about the impact of the age, grade, gender, ethnic background, ethnic diet and residence variables on occurrences of eating disorders.

This research was also considered substantial because the results with the Whitehorse youth on the EDI-2 provided an opportunity to consider its efficacy for measurement of disordered eating behaviors and attitudes in the general population. Research questions were generated regarding the EDI-2 with the analysis of the data. For example, it became evident that there is greater differentiation of the groups of students with EDI-2 scales such as the *Drive for Thinness, Body Dissatisfaction* and *Bulimia.* Consequently, a potential research question might be to ascertain how many students who are elevated on these scales, actually have eating disorders.

A final important reason why this research was considered meaningful is that the results might be applied to development of prevention and intervention programs with the Whitehorse youth. The EDI-2 subscales are intended to measure commonly identified psychological and behavioral constructs of eating disorders such as body image. Thus, the scales are potential topics for eating disorder prevention. Furthermore, the degree with which each scale was scored by the Whitehorse youth was considered a potential indication of the direction and emphasis with which each construct might be incorporated into a prevention program.

There were some predictable results found with this research. There were greater numbers of girls than boys who exhibited body dissatisfaction and drive for thinness. In addition, students categorized by age, grade and gender varied on some of disordered eating behaviors and attitudes characterized in the EDI-2. However, many of the results were unexpected and unusual. In the EDI-2 profile analysis, it was found more boys than girls at risk for developing an eating disorder: 2.4 to 8.6% of Whitehorse boys and 1.6 to 6.5% of Whitehorse girls. Another surprising finding was evident in the t-tests comparisons of Whitehorse youth and Ontario youth: On many of the EDI-2 scales, the Whitehorse boys between the ages of 14 to 18+ had larger mean scores than the Ontario boys. Essentially, it appeared that the older Whitehorse males had more disturbed eating behaviors and attitudes. Another unusual discovery with respect to the t-tests was that *Maturity Fears* were more common for the Whitehorse youth than for the Ontario and American youth.

The finding that the Whitehorse boys' disordered eating behaviors and attitudes were more common than the Whitehorse girls' disordered eating behaviors and attitudes was explained by acknowledging the boys' characteristics, as well as by examining the test and data analyses methods. First, these boys may actually have a wider range of eating disorder behaviors and attitudes. Second, because adolescent males have generally been depicted as more susceptible to externalizing disorders such as conduct disorder and delinquency, the EDI-2 scales may be measuring some of these more common concerns in the scales *Bulimia*, *Impulse Regulation* and *Interpersonal Distrust*. To corroborate this reasoning, Garner (1991) indicated that there is overlap between other psychological problems and many of the items on the EDI-2 scales. For example, the problem of interpersonal distrust is measured in other psychological questionnaires. Therefore, EDI-2 items such as, " I have close relationships," are similar to items measuring related psychological concerns such as, "I won't get close to people because I'm afraid they will make fun of me," found on the Millon Adolescent Clinical Inventory (Millon, 1993).

The data analysis method used of setting the cutoff criteria at the 75th percentile on eight, or six to eight EDI-2 subscales might also have been involved in the differences found between the boys and girls. This was considered possible, particularly in light of the male-female ratio identified when specific scale results instead of profiles are analyzed. When individual scales were analyzed, gender differences were identified on the scales of *Drive for Thinness* and *Body Dissatisfaction*. Girls had higher means and scored more frequently above the cutoff scores on these scales, and on the *Bulimia* scale, boys had higher means and scored more frequently above cutoff scores. These differences were noted in both the frequency analyses of scorers above the cutoff and the t-tests.

In essence, Whitehorse females exhibited disordered eating behaviors and attitudes that have been commonly identified by the other eating disorder researchers (Garner, 1991). Therefore, a potential conclusion presented regarding the measurement of girls' disturbed eating and body image preoccupations was that they were identifiable when fewer EDI-2 scales were examined. In fact, Garner (1991) described girls and women who had been diagnosed with AN who had only four elevated EDI-2 scales. Correspondingly, it appeared that the boys' disordered eating behaviors and attitudes were wide ranging. For both genders, it was evident that interviews and further assessment are necessary in order to diagnose an eating disorder. However, diagnosis was not the objective of this research; instead, the results were examined in order to gain a general understanding of the prevalence of disordered eating behaviors and attitudes in the Whitehorse boys and girls.

Summing up, it appeared that the attributes of the population itself, as well as the test constructs and data analysis methods used were associated with the both the expected and the unexpected results regarding the boys and girls. The girls showed specific disordered eating behaviors and attitudes, and males exhibited more general eating disorder concerns that potentially overlap with other psychological problems. An interesting research question to follow up on these results might be to investigate how many boys versus girls who scored above the 75 percentile on the EDI-2 scales, *Drive for Thinness* and *Body Dissatisfaction*, would actually be diagnosed with an eating disorder.

The EDI-2 was considered an ideal questionnaire to use in the generation of recommendations for the Whitehorse youth. The EDI-2 subscales were intended to measure specific disordered eating behaviors and attitudes, therefore each subscale is a potential topic in an eating disorder curriculum. Results from the frequency analyses with the Whitehorse youth were consulted to identify key topic areas and most frequently scored disordered eating behaviors and attitudes. As well, each of the groups of students categorized by age, grade, gender, ethnic background, ethnic diet and residence were consulted to identify target groups for prevention.

With respect to prevention recommendations relevant to the Whitehorse boys' and girls' disordered eating behaviors and attitudes, a primary recommendation is that nutritional education be incorporated into the curriculum. This is particularly important for the Whitehorse boys, in view of the fact that it was found that more boys than girls exhibited concerns characterized on the *Bulimia* scale. In addition, with reference back to the findings of *Yukon Health Promotion Survey* (1994), young males reported less nutritional knowledge and poorer eating habits than females. The importance of nutrition, particularly for boys was also reported by Anderson (1988). He found a relationship between premorbid obesity and eating disorders in males.

Body image, which is addressed by items on the *Drive for Thinness* and the *Body Dissatisfaction* scales, is a concern for a significant proportion of the youth and adult populations throughout North America, predominantly female populations. This was evident in these particular research results, girls scored more frequently than did boys with scales regarding these concerns. The greater female susceptibility has been attributed to the interaction of the impact of biology, psychology and society on females. Essentially, the female body acquires a greater proportion of fat with the onset of puberty. As a result, girls are at greater risk for unhealthy and excessive focus on body size. This response is compounded by sociocultural pressures to be thin and by models of thinness depicted in media.

Males have not been associated with body image concerns. In fact, researchers for the American Association of University Women (1991) found that males maintain a more positive self-image of themselves than do females throughout the teen years. In this present research, Whitehorse boys had fewer self-image and body image concerns than the girls did. Despite the greater concern for girls with respect to body dissatisfaction and drive for thinness, prevention efforts directed at both the boys and girls would likely benefit the Whitehorse youth.

One important topic to consider with respect to self-image and growth is the differential impact of physical changes each gender undergoes during puberty and adolescence. Conceivably this topic could be integrated into nutritional education topic. For example, to address overeating concerns and their impact on body image, consider age-appropriate explanations of how people develop a set point of weight and fat cells at key developmental stages. Shils and Young (1988) provided a reasonable explanation. They described three stages in the development of fat cells. According to their research, we develop fat cells at times when a person is most vulnerable to overeating: during the final trimester of pregnancy, during the first two years of life, and during adolescence.

The t-tests results were used to compare the disordered eating behaviors and attitudes of the Whitehorse youth with those of other youth groups. The predominating question regarding this analysis was whether disordered eating behaviors and attitudes were less prevalent in the Whitehorse youth because they live in a smaller and more isolated community than the other youth. Eating disorder differences between urban and rural youth, and between youth living in communities of various levels of urbanization, have been noted in the research (Hoek, Bartelds, Bosveld, Graaf, Limpens, Maiwald, & Spaaij, 1995). For the Whitehorse youth, the results were generally as suspected: They scored lower than the Ontario and northeastern United States youth on most of the EDI-2 scales. However, there were also unexpected results. First, the older Whitehorse males had some eating disorder concerns that were similar to, and some that were slightly greater than the same age and gender Ontario youth group. Second, maturity fears were identified as a greater problem for the Whitehorse boys and girls than for the Ontario and American boys and girls. It was premised that the Whitehorse boys and girls had fewer opportunities to explore possibilities associated with maturation than did the youth in larger centres. Thus, they were potentially less confident about the consequences of maturation.

Prevention and intervention efforts intended to address the students' maturity fears might be directed at the discussion of the expectations they feel and fear as they mature. Specific to eating disorder prevention, all of the Whitehorse students, especially the younger ones who scored more frequently on this scale, may benefit from the explication of natural growth processes. Extraneous, but potentially related fears, such as the options for education and careers they must consider as they mature, particularly if pursuing them involves leaving Whitehorse, may be equally important to deal with.

The results regarding students categorized into groups according to their ethnic background, ethnic diet, and residence were analyzed to identify the degree of disordered eating behaviors and attitudes in the student groups and to determine potential associations between these variables and occurrences of disordered eating behaviors and attitudes. With the residence variable there appeared to be a definite association between these variables and disordered eating behaviors and attitudes. Most of the ethnic background student groups did not vary significantly from each other, except for the Asian Canadian students; they scored above the cutoff more frequently than the other groups of students on most of the EDI-2 scales.

The results regarding the variable of ethnic diet were unexpected, with the students reporting to greater amount of ethnic food in their diet, there were also greater numbers who scored above the cutoff on many of the EDI-2 scales. The following conclusions regarding these findings are presented with the caveat that further research is required to verify them. First, this pattern may be evidence that with a stronger ethnic identity and involvement, possibly reflected in ethnic diet, one is at a greater risk for developing eating disorder behaviors and attitudes. It did not appear that the initial reasoning presented in this research that one's ethnic background is associated with the positive benefits of belonging, such as having an identity in a cultural group was associated with eating behaviors and attitudes.

The theory developed by Atkinson, Morten, and Sue (1993) and Markstrom, Adams, and Spencer (1994) regarding identity development within one's own ethnic minority group and within the majority group was considered in the explanation of these results. Essentially, these researchers asserted that youth from minority ethnic groups have more identity challenges to navigate through because they must find their place in both their minority group and the majority group. A second possible explanation contemplated is that greater percentage of ethnic food in the diet is related to greater family control characteristic of some ethnic groups. Depending on the extent of the control of the family, one can be positively or negatively affected. Reference back to Wagner and Compas (1990) cited in the literature review, is helpful to illustrate this association regarding family control. They described a negative effect of culture on youth. According to their findings, youth from families that followed their ethnic and cultural role assignments of age and gender were found to have worse academic and psychological adjustment than youth from families that did not follow these age and gender role assignments. In addition, Steiger and Stotland (1995) attributed some cases of AN to excessive familial control within ethnic groups.

In this research, the find that ethnic diet is associated with disordered eating behaviors and attitudes was confounded by unclear causal relationships. The above explanations of familial control and ethnic identity development were presented as potential factors. Interesting research questions might be developed to explore the role of ethnic diet in eating disorders. For example, what is the relationship between family and ethnic diet? Previous researchers have generally found less instances of eating disorders in minority groups of people (Grange et al, 1997; Rosen, Silberg & Gross, 1988; Gowers & McMahon, 1989 & Rosen et al, 1988). A qualitative study of what people in minority groups believe are the reasons for their fewer instances of eating disorders might render information about which aspects of minority groups' cultures are associated with eating behaviors and attitudes.

Further discussion regarding ethnic diet is useful to underscore the relevance of this variable when efforts are directed towards prevention. In this research, it was proposed that the cultural factors of ethnic background and ethnic diet are associated with healthy eating behaviors and attitudes. Thus the reasoning that followed was that prevention efforts aimed at increasing students' knowledge of the cultural and meaningful aspects of ethnic diets might encourage more healthful attitudes towards food. This reasoning was considered complementary to the existing cultural awareness in Yukon schools. For example, Aboriginal culture is considered important in Whitehorse: there are Aboriginal language programs, and an awareness of the need to educate students about Aboriginal culture. Thus, prevention and intervention educators might simultaneously address disordered eating behaviors and attitudes and meet the directive of including Aboriginal culture in the curriculum. This might be accomplished with the inclusion of the cultural eating practices of Aboriginal and other ethnic groups: ideally students will learn about the healthful aspects of eating found in each ethnic group. Furthermore, a secondary benefit of might be achieved with this type of curriculum. Identity issues that minority group youth struggle with as premised by Atkinson, Morten, and Sue (1993) and Markstrom, Adams, and Spencer (1994) might be less problematic when youth are encouraged to consider the healthful aspects of their ethnic diet, ideally they would experience greater sense of pride and identity.

It was evident with the research results that a significant proportion of the Yukon youth who must leave their families and communities to attend school in Whitehorse had disordered eating behaviors and attitudes. For these, simple preventive measures could be initiated. It was proposed earlier that these youth might be dealing with insufficient opportunities for the social and nutritional benefits of family and community. Therefore, possible isolation might be addressed by the development of a peer support group. Potential deficiency of diet could be dealt with by nutritional advice and guidance provided within the context of the eating disorder classes. In addition, students might be encouraged to eat their meals with either a group of peers or with other families.

It was contended that the findings of this study could be applied to the development of a prevention and intervention program for Whitehorse youth. Concerns that have been identified in the Whitehorse youth are maturational issues and a range of disordered eating behaviors and attitudes such as body dissatisfaction, drive for thinness, bulimia, and interpersonal distrust. A school prevention program is currently considered the most feasible way to access sizeable numbers of youth (Shoemaker, 1998). Concepts from learning theories can also be applied to prevention programs. We develop preferences for how and what we eat in our early years because we are nurtured both physically and emotionally when we eat. Fundamentally, it is recommended that the focus be on healthy eating as opposed to excessive eating and dieting. With prevention programs, one can involve the media, parents, and schools.

Issues of prevention, intervention and treatment in the Yukon

In discussing the results of this study earlier in this chapter, suggestions were provided so that prevention planners and educators might address the eating disorder concerns of the Whitehorse youth. It was suggested that the content might be integrated to include physical, psychological, and sociocultural aspects of both healthy eating and the eating disorders. Furthermore, research and literature of existing prevention approaches and programs were reviewed in Chapter II. At present, the Yukon Department of Education is previewing an eating disorder curriculum developed by British Columbia Education (1999) and may include it in their CAPP program.

Regardless of whether or not the British Columbia Education curriculum is considered and adapted for the Whitehorse youth, a key concern in the North remains. Essentially, there is a lack of economic and professional resources by which to develop, maintain, and assess the efficacy of a prevention program. A difficulty identified in the *Needs Assessment of Eating Disorder Services in British Columbia* (1999) is that in the North, and in similarly isolated communities, the level of stress and burnout are significant problems for professionals. Canitz (1991) examined burnout in health care community nurses in the Yukon and found that the key concerns of the nurses were social loneliness, feelings of decreased control in situations where nurses feel inadequately prepared for the diverse demands of the North, and lack of satisfactory supports and resources.

Among professionals who provide services to adolescents, those who are most likely to experience burnout are teachers who serve in a teaching and caring role, and the mental health and health care professionals. At the intervention level, another situation is noted as a potential complication in the effective treatment of eating disorders. In Whitehorse, and elsewhere in the North, there are few mental health resources; thus, unlimited mental health care is difficult to procure, and many people do not have the option of unlimited mental health care insurance.

Based on personal knowledge and clinical experience, and the information gathered from Yukon government publications such as the *Community Profiles* (1996) and *An Accounting of Health* (1994), it is clear that intervention resources in the Yukon are limited. There is one psychiatrist in Whitehorse. Family physicians often serve a key role in their patient's physical and mental health care. Critical medical patients are sent to Vancouver, British Columbia, for treatment. Whitehorse is the only community in the Yukon with a hospital; the other communities have community nurse(s) who attend to a range of illnesses. In a few Yukon communities there is a resident physician; however, in many of them, it is the nurse's responsibility to provide care and refer patients to a physician or Yukon Mental Health Services in severe situations.

Nevertheless, persons with eating disorders often require extensive physical and psychological treatment. The motivation and interest in this research was stimulated by concerns voiced by teachers, parents, and various medical professionals regarding youth they have identified with eating disorders that have limited treatment options and services (Personal communications). With such limited resources for intervention in mind, there is a growing awareness in the schools, in the medical health care settings, and with private mental health care providers that eating disorder concerns should be addressed at the prevention level. Furthermore, it is becoming increasingly obvious that interdisciplinary care is necessary to meet the physical and psychological needs of persons already diagnosed with an eating disorder. While intervention programs are not the focus of this research, a preliminary plan that could be implemented in the Yukon might be considered. Interdisciplinary care could be implemented by adopting the model of Individualized Education Plan used by schools for students with learning needs. One professional would oversee the involvement of the other professionals and parents, and they would meet on a regular basis to ensure that the youth's physical and psychological objectives and needs are addressed.

With respect to an eating disorder prevention program for the youth of Whitehorse, it might be designed to address their specific psychological and physical concerns. As suggested earlier, consideration of their results on the EDI-2 subscales could provide a range of topics and direction with respect to amount of content required for each. Topics might also be derived from the constructs depicted on each of the EDI-2 scales such as body image, maturity, dieting, bingeing, purging, perfectionism, interpersonal distrust, social insecurity, and impulse regulation.

The EDI-2 constructs are considered relevant and related to other psychological and lifestyle concerns of youth such as self-esteem, emotional adjustments, and healthy lifestyle choices. For example, self-esteem is considered an important related topic. Button, Sonuga-Barke, Davies & Thompson (1996) investigated the role of self-esteem in the causation of an eating disorder by administering self-esteem questionnaires to 595 girls between the ages of 11 and 12 and by following up 3 to 4 years later with a questionnaire measuring eating and other psychological problems. They found that girls with low self-esteem are at risk for eating disorders by age 15 to 16. In view of these results, inclusion of objectives such as self-esteem enhancement, in the prevention of eating disorders are likely to be beneficial.

Further aspects of a prevention program in Whitehorse to consider are development of media-literacy skills as illustrated in the prevention programs described in Chapter II. Youth in the North lack access to some of the urban influences that are potentially involved in body image concerns. However, television coverage is universal, so that both urban and rural youth are exposed to media messages involving body image. Television access may, in fact, be a component in the higher maturity fears identified with the Whitehorse youth. The students are able to watch a range of situations on television but do not have the same real-life experiences as youth in larger centers to assess each message's truthfulness.

Cultural awareness of ethnic diets and ethnic background might also be incorporated into a prevention program. A conclusive relationship between ethnic diet and ethnic background with disordered eating behaviors and attitudes was not identified. Nevertheless, it was contended that the students' awareness of each culture's beliefs around food and wellness might address potential eating problems identified for small groups of Whitehorse youth. As well, this could be an important component to include because the students come from a range of ethnic backgrounds, including a large proportion of Aboriginal youth in Whitehorse and other northern communities. This ethnic component of the program could be based on a health model. Students might identify strengths in each culture that revolve around eating and celebrating as well as standards of health in each culture. This could include discussion of types of foods characteristic of each culture. They could also discuss traditional celebrations related to food and standards within their culture for body image. A final argument proposed for inclusion of ethnic and cultural components to an eating disorder prevention program is that students can learn that body image is relative to each culture. This is key to the critical examination of body-size societal standards.

A final point to consider in the development of a prevention program is to ensure that the content and objectives are developmentally appropriate for the Whitehorse youth. At the elementary level, students would likely require lessons around food, body image, maturity, and media/cultural awareness that are more hands-on and experiential. At the high school level, students would likely benefit from lessons that are more conceptual in nature, with ample opportunities for interaction and discussion, as opposed to the format of didactic lectures typical in many school classrooms.

In summation, it is contended that a prevention program could be incorporated into the school curriculum in Whitehorse and in other communities of the Yukon. Conditions and components to consider are: First, that physical, psychological, and sociocultural aspects of eating and eating disorders are included in the curriculum. Second, that findings from this study are utilized to ensure that key concerns of the Whitehorse students regarding eating behaviors and attitudes are incorporated into the lessons.

Limitations and delimitations of this research project

The preliminary limitations and delimitations of this research study are discussed in the methods chapter. They are reviewed here, and further limitations and delimitations are discussed with respect to the findings of this study.

First in the discussion of limitations and delimitations, it is useful to consider the efficacy of research aimed at determining the extent of disordered eating behaviors and attitudes in Whitehorse. Shoemaker (1998) proposed that a screening program is most effective if it an important health problem is investigated. In these days of managed health care plans and government cutbacks on medical funding, importance must also be assessed by the degree of effects found in the general population. In Whitehorse, and elsewhere in the North, there are many serious social and health concerns. To name a few, there are high rates of diabetes, crime, and alcohol and drug addictions (Dacks, 1981; Shissel, 1992; Ross, 1992; & Ponting, 1997). Furthermore, one must consider the impact of these problems on the family and community. For example, the high rate of children and youth with fetal alcohol syndrome is attributed to alcohol abuse (Yukon Bureau of Statistics, 1994). However, eating disorders are also a serious problem that can result in life-threatening consequences. The frequency of eating disorder problems was not yet known in Whitehorse or other Northern communities, so this research was considered valuable for the determination of how important a health problem it is.

A primary problem with the use of questionnaires for this research project was that one could obtain all the information required to make a diagnosis or to resolve unusual findings. In the research situation, as opposed to the clinical situation, there is no qualitative information available with use of the EDI-2 questionnaire.

Another problem with questionnaire use voiced by Shoemaker (1998) is eating disorder populations tend to deny disordered eating behaviors and attitudes. The response styles of the Whitehorse youth could not be identified because there are no validity scales on the EDI-2. As a result, the findings of this research were not based on firm evidence of disordered eating behaviors and attitudes but on results that suggestive of these problems.

In a sense, this questionnaire limitation is acceptable because a primary objective with this research was to acquire an understanding, as opposed to a diagnosis, regarding the disordered eating behaviors and attitudes of the Whitehorse youth. This research effort might be conceived as a preliminary screen for eating disorders. As well, as stated in the introductory chapter, another objective was to identify concerns particular to the youth in Whitehorse. This objective was especially important in light of the findings of a recent qualitative study regarding eating disorders that was completed in isolated Northern B.C. communities that are similar to Whitehorse and other Yukon communities. The reported findings from this qualitative study were that parents and professionals from these communities identified eating disorder occurrences, particularly with youth, and voiced concerns regarding lack of resources for prevention, intervention and treatment of eating disorders (Smye, Niblock & Anderson, 1998).

A further concern noted in this research was the measurement limitations with some EDI-2 scales. In particular, with the *Bulimia* scale, one was not able to differentiate between bingeing and purging. And with the *Maturity Fears* scale, Garner (1991) indicated that it is most applicable to older teens and adults, yet it was administered to youth as young as 11 years of age. Such limitations were possibly factors involved in the unusual results found with this study, such as the greater prevalence of boys with bulimia and the larger-than-expected numbers of students reporting to *Maturity Fears*. Presumably, if this research were to be taken to a next step involving actual diagnoses, these results could be accounted for within the context of clinical interviews.

Another limitation identified at the outset of the administration of the questionnaires was the varying numbers of students who participated from each of the schools. This was considered a possible weakness in the study because generalizations are less plausible when the procedure of random sampling is not followed. This limitation was viewed as minimal because few differences between the students from each of the schools were identified. Concerns regarding selection biases that can occur when random sampling is not performed were not perceived as problematic because the students were drawn from mandatory classes. Aside from the students who were not registered in these classes during that term and students who were absent on the days of questionnaire administration, there were only three students who chose not to participate.

Sample size concerns were also apparent after the analyses of students categorized according to each of the variables, age, grade, gender, ethnic background, percentage of ethnic diet, and residence were performed. On some of these variables, the numbers of students groups were small, however conversions of their numbers into proportions were performed to address this concern.

Another concern was noted with the analysis of the sample: only 11.3% of the students who participated indicated Aboriginal ethnic background. Initially, this research was considered an ideal opportunity to assess the eating disorder concerns in Aboriginal youth because of the large proportion of First Nations people in Whitehorse. Population estimates provided by Statistics Canada (1996, 1999) are that approximately 22% of the Whitehorse population report Aboriginal ethnic background. The lower proportion of Aboriginal youth who participated in this research might be attributed to the high school dropout rates of Aboriginal youth in the Yukon that Dack (1981) reported. Essentially, the findings regarding the Aboriginal youth were limited to the results based on a smaller sample size than expected.

Another limitation, which could also be conceived as delimitation, was the variety of analyses applied to explication of the results. A positive aspect of this approach was that with utilization of a variety of analyses, there was a more thorough description of the Whitehorse youth on EDI-2 measures. Profile analyses were conducted to identify prevalence and t-tests were performed to compare Whitehorse youth with youth from larger, more centralized areas. In addition, there were the analyses of students categorized according to demographic variables of age, grade, gender, ethnic background, ethnic diet, and residence. A negative aspect of the use of a variety of analyses is that one must be able to integrate the results coherently. Overall, this integration was possible; and parallel data with respect to the variables of gender, grade, and age were found.

Once the data was analyzed, a limitation that became apparent was that with some of the findings, there were several explanations possible. For example, it was suggested that extraneous influences might be involved in the relationship found between disordered eating behaviors and attitudes and high percentage of ethnic food in the diet. Specifically, family control and the identity-formation challenges of minority group youth were considered potential influences. In addition, the unusual results regarding greater male prevalence with disordered eating behaviors and attitudes was attributed to two possibilities: that there actually are greater disordered eating behaviors and attitudes with these boys, or that the EDI-2 measures are also measures of related psychological concerns experienced by the boys. Essentially, one limitation of this study was that research was not directed at explanation of the interaction noted with these variables. This was not an objective of this research project. Nevertheless, it is a feasible area of investigation, because aspects of culture, family, and nutrition related to diet could be further examined in order to understand how these factors might be involved in eating disorder onset and maintenance. One recommendation proposed with respect to understanding ethnic diet in the eating disorder paradigm was to conduct qualitative research in order to have participants articulate how they view ethnic diet in their lives. The results might be instructive with respect to directions one might take with further research.

In summation, limitations and delimitations identified with this research were attributed to the EDI-2 questionnaire, the research and data analysis methods, and the size and characteristics of the Whitehorse student sample. Furthermore, with regards to the results of this study, the need was identified for more detailed research of the extraneous influences potentially involved in occurrences of disordered eating behaviors and attitudes and the variables of ethnic diet and ethnic background.

Concluding Remarks

In this final chapter, the objectives and methods used with this research were reviewed. As well, the implications of the findings were discussed, in particular how this research and other related research on eating disorder prevention can be applied to Whitehorse youth. Finally, the limitations and delimitations of the study were summarized.

Literature and research regarding physical, psychological and sociocultural aspects of eating and eating disorders were discussed because of the belief that eating disorders are a multifaceted problem and that prevention programmers need to address all these facets. With this view in mind, the prevalence of disordered eating behaviors and attitudes as well as a range of potential variables involved in occurrences of eating disorders were investigated. The variables considered were age, grade, gender, ethnic background, ethnic diet, and residence. In addition, the Whitehorse youth were compared to youth in living in larger and more centralized settings.

Summaries of the findings from this research are as follows: There was less prevalence for disordered eating behaviors and attitudes in the Whitehorse youth than for youth living in more centralized and populated centres. A key exception to this finding was that Whitehorse youth exhibited greater maturity fears. Gender differences were noted: more Whitehorse boys than Whitehorse girls had disordered eating behaviors and attitudes. The girls reported a greater degree of concern on specific eating disorder constructs such as drive for thinness and body dissatisfaction, whereas boys reported a broad range of disordered eating behaviors and attitudes. Age and grade differences were also evident: maturity fears were greatest for the younger students, and body dissatisfaction was greatest for the older students.

There were less conclusive results identified with the analyses of the variables of ethnic background, ethnic diet, and residence. Minimal variation was noted between most of the groups of students categorized according to ethnic background; the one exception was that more Asian Canadian youth reported disordered eating behaviors and attitudes than did the other ethnic groups of youth. Aboriginal youth did not vary significantly from the other groups of students categorized by ethnic background. For the most part, students categorized according to ethnic diet and residence acknowledged few disordered eating behaviors and attitudes. However there were some notable findings regarding these variables: significant proportions of the Whitehorse youth who indicated residence away from home, and significant proportions of youth who reported a greater percentage of ethnic food in their diets exhibited greater degrees of disordered eating behaviors and attitudes.

An overall recommendation proposed was that prevention and intervention programmers take into account and develop their programs based on the disordered eating behaviors and attitudes found with the Whitehorse youth. Specifically, appropriate prevention and intervention might be developed by integration of important objectives characterized in some existing prevention programs, the awareness of the needs of the Whitehorse youth, and the understanding of how best to utilize local and limited resources. Ideally, the development of such a program might have far-reaching value for other remote and small communities.

Potential research questions were generated as a result of this study. It was suggested that there be further investigation of factors underlying the variables of ethnic diet and residence, and of the findings of greater male than female prevalence of disordered eating behaviors and attitudes. The gender findings were incompatible with most eating disorder research: girls are usually identified as most at risk for eating disorders. In addition, research questions regarding the EDI-2 were evident: for example it might be useful to identify the importance of particular scales, such as *Drive for Thinness* and *Body Dissatisfaction* for eating disorder diagnoses.

In conclusion, it is this researcher's hope that the results from this study can be used in the development of effective treatment and prevention programs and that they can be added to the existing knowledge regarding causes of eating disorders. To articulate this hope more eloquently, it is helpful to refer to Russell (1990), who stated what the objective of research should be. "In searching for causes, we hope to identify both the 'what' that has gone wrong, and, if possible, with the identification of 'why' and 'how;' we also hope to find ways of putting it right or preventing it from happening"(p.53).

References

Agras, W. & Kirkley, B. (1986). Bulimia: Theories of etiology. In K. Brownell & J. Foreyt (Eds.), *Handbook of eating disorders*. New York: Basic Books.

Alper, J. (1986) Depression at an early age. *Science*, 86, 45-50.

American Association of University Women. (1991). *Short changing girls, short changing America*. Washingtion, D.C.: Presented at meeting.

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorder 4th edition* (DSM-IV). Washington, D.C.:Author

Anderson, A.E. (1988). Anorexia nervosa and bulimia nervosa in males. In P.A. Garfinkel and D.M. Garner (eds). *Diagnostic issues in anorexia nervosa and bulimia nervosa*. New York: Brunner/Mazel. (pp. 166-207).

Anderson, A.E. (1992). Follow-up of males with eating disorders. In W. Herzog, H.C. Deter, & W. Vandereycken (Eds.). *The course of eating disorders*. (pp. 53-68).

Ash, P. (1997). Review of the eating disorder inventory – 2. In Teddy Maddox (ed). Tests: A comprehensive reference for assessments in psychology. Austin, Texas: PRO-ED, Inc.

Atkinson, D.R., Morten, G. & Sue, D.W. (1993). *Counselling American minorities: A cross-cultural perspective*, 4th Edition. Dubuque: Wm.C.Brown Communications.

Attie, I, & Brooks-Gunn, J. (1989). Development of eating problems in adolescent girls: A longitudinal study. *Developmental Psychology*, 25, 70-79.

Austin, E.W. & Johnson, K.K. (1996). *Immediate and delayed effects of media literacy training on third graders' decision-making for alcohol*. Seattle: Washington State University.

Babbitt, R.L., Edlen-Nezin, L., Manikam, R., Summers, J.A. Murphy, C.M. (1995) Assessment of eating and weight related problems in children and special populations. In D.B Allison, (ed.). *Handbook of Assessment Methods for Eating Behaviors and Weight Related Problems*. Thousand Oaks, Ca.: Sage Publications, Inc.

Beere,C.A. (1990). *Sex and gender issues: A handbook of tests and measures*. Westport, CT.: Greenwood Press.

Beglin, S.J. & Fairburn, C.G. (1992). Evaluation of a new instrument for the detection of eating disorders in community samples. *Psychiatry Research*, 44: 101-210.

Bell, R. (1985). *Holy Anorexia*. Chicago: University of Chicago Press.

Berel, S. & Irving, L. (1996, March). *Media and disturbed eating: An analysis of media influence and implications for intervention*. Paper presented at the Association for Women in Psychology Conference, Portland, OR.

Berger, L.S. (1991). *Substance Abuse as a Symptom*. Hillsdale, N.J.: The Analytic Press.

Berkovitz, I.H. (1993). Effects of secondary school and college experiences on adolescent female development. In M. Sugar (ed). *Female adolescent development* (pp.138-156). New York: Brunner/Mazel Inc.

Beumont, P. & Vandereycken, W. (1998). Challenges and risks for health care professionals. In W. Vandereycken and P.J.V. Beaumont (Eds.). *Treating eating disorders: Ethical, legal and personal Issues*. (pp.1-29). New York: New York University Press.

Blos, P. (1967). The second individuation of adolescence. *Psychoanalytic Study of the Child*, 22, 162-186.

Brantner-Inthaler, S., Nasserbakht, A., Shih, G. & Steiner, H. (1994) Differences in caloric utilization in eating disordered adolescents. In H.C. Steinhausen (Ed.) *Eating disorders in adolescence*. New York: Walter de Gruyer.

Brookings, J.B. (1997). Eating Disorder Inventory-2. In Daniel J. Keyser and Richard C. Sweetland (1994) *Test Critiques Volume X.* Austin: Pro-Ed.

Brooks-Gunn, J. (1988). Antecedents and consequences of variations in girls' maturational timing. *Journal of Adolescent Health Care*, 9, 365-373.

Brooks-Gunn J. & Reiter, E.O. (1990). The role of pubertal processes. In S.S. Feldman & G.R. Elliot, (eds). *At the threshold: The developing adolescent*. Cambridge, MA: Harvard University.

Brooks-Gunn, J. & Warren M.P. (1985) Effects of delayed menarche in different contexts: dance and nondance contexts. *Journal of Youth Adolescents* (Vol. 4, pp. 285-300)

Bruch, H. (1957). *The Importance of Overweight*. New York: W.W. Norton & Company.

Bruch, H. (1973) Eating Disorders: Obesity, anorexia nervosa and the person within. In Garner, D.M. (1991), *The Eating Disorder Inventory – 2 professional manual.* Odessa, FL: Psychological Assessment Resources Inc.

Bruch, H. (1978) *The Golden Cage*. Cambridge: Harvard University Press.

Bruch, H. (1982). Anorexia nervosa: Therapy and theory. *American Journal of Psychiatry*, 139, 1531-1538.

Brumberg, H. (1988). *Fasting girls*. London: Harvard U.P.

Bryant-Waugh, R. Knibbs, J., Fosson, A., Kaminski, Z., & Lask, B. (1988). Long-term follow-up of patients with early onset anorexia nervosa. *Archives of Disease in Childhood*, 63, 5-9.

Bryne, D., London, O. & Reeves, K. (1968). The effects of physical attractiveness, sex, and attitude similarity on interpersonal attraction. *Journal of Personality*, 36, 259-271.

Button, E.J. & Whitehouse, M.P. (1981). Subclinical anorexia nervosa. *Psychological Medicine, 11*, 509-516.

Button, E.J., Sonuga-Barke, E.J.S., Davies, J. &Thompson, M. (1996). A prospective study of self-esteem in the prediction of eating problems in adolescent school girls: Questionnaire findings. *British Journal of Clinical Psychology*, 35, 193-203.

Campbell, P.G. (1995). What would a causal explanation of the eating disorders look like? In G. Szmukler, C.Dare & J. Treasure (Eds.). *Handbook of eating disorders: Theory, treatment and research*. New York: John Wiley & Sons.

Canitz, B.T. (1993). *A study of turnover in northern nurses: Isolation, control and burnout.* Unpublished Masters Thesis: University of Toronto.

Carlic, A. (1995). The girl and the grizzley: Bringing traditional narratives into Yukon classrooms. *Northern Review*, 14, 34-37.

Carlson, N.R. (1986) *The physiology of behavior. 3rd Edition*. Boston: Allyn & Boston.

Carter, J.A. & Duncan, P.A. (1984). Binge-eating and vomiting: A survey of a high school population. *Psychology in Schools, 21*, 198-203.

Carter, J.A. & Moss, R.A. (1984). Screening for anorexia and bulimia nervosa in a college population: Problems and limitations. *Addictive Behaviors, 9*, 405-419.

Casper, R.C. (1983). On the emergence of bulimia nervosa as a syndrome: A historical view. *International Journal of Eating Disorders*, 2, 3-16.

Casper, R.C. (1990). Personality features of women with good outcome from restricting anorexia nervosa. *Psychosomatic Medicine*, 52, 156-170.

Casper, R.C., Eckert, E.D., Halmi, K.A., Goldberg, S.C., & Davis, J.M. (1980). Bulimia. Its incidence and clinical importance in patients with anorexia nervosa. *Archives of General Psychiatry*, 37, 1030-1034.

Casper, R. C., & Heller, W. (1991). "La douce difference" and mood in anorexia nervosa: neuropsychological correlates. *Progress in Neuropsychopharmacology and Biological Psychiatry*, 15, 15-23.

Cassier, E. (1976). *An Essay on Man*. London: Yale University Press.

Celio, A.A., Winzelberg, A.J., Eppstein-Herald, D., Wilfley, D.E., Springer, E.A., Dev, P. & Taylor, C.B. (2000). Reducing risk factors for eating disorders: Comparison of an internet- and a classroom-delivered psychoeducational program. *Journal of Consulting and Clinical Psychology*, 68, 650-657.

Centers, R. (1972). The completion hypothesis and the compensatory dynamic of intersexual attraction and love. *Journal of Psychology*, 82, 111-126.

Chiado, J. & Latimer, P.R. (1983). Vomiting as a learned weight-control technique in bulimia. *Journal of Behavior Therapy and Experimental Psychiatry*, 14, 131-5.

Childress, A., Brewerton, T., Hodges, E., & Jarrell, M. (1993). The Kids Eating Disorder Survey (KEDS): A study of middle school students. *Journal of American Academy of Child and Adolescent Psychiatry*, 32, 843-50.

Christianson, T. (1929). Macrosomia adiposa congenita: A new endocrine syndrome of familial occurrence. *Endocrinology*, 13, 149.

Clarke, M.G., & Palmer, R.L. (1983). Eating attitudes and neurotic symptoms in university students. *British Journal of Psychiatry, 142*, 299-304.

Coates, K.S. (1991). *Best Left as Indians*. Montreal & Kingston: McGill-Queens University Press.

Coates, K.S.(1994). The discovery of the North: Towards a conceptual framework for the study of northern/remote regions. *The Northern Review*, 12/13, 15-43.

Cohen, P. & Cohen, J. (1984). 'The clinician's illusion.' *Archives of General Psychiatry*, 41, 1178-82.

Conoley, J.C., & Impara, J.C. (Eds.) *The Twelfth Mental Measurements Yearbook (1995)*. Lincoln, Nebraska: The University of Nebraska Press.

Coolican,C. (1999) *The effects of television programming that emphasizes beauty and thinness on women's body image and self-esteem*. Unpublished Doctoral Dissertation. Edmonton: University of Alberta

Cooper, P.J., & Fairburn, C. G. (1983). Binge-eating and self-induced vomiting in the community: A preliminary study. *British Journal of Psychiatry, 142,* 139-144.

Cooper, P.J., Morrison, T.L., Bigman, O.L., Abramowitz, S.I., Levin, S., & Krener, P. (1988). Mood changes and affective disorder in the bulimic binge-purge cycle. *International Journal of Eating Disorders, 7*, 469-474.

Cooper, Z., Cooper, P.J, & Fairburn, C.G. (1985). The specificity of the Eating Disorder Inventory. *British Journal of Clinical Psychology*, 24, 129-30.

Cooper, Z. & Fairburn, C.G. (1986). The depressive symptoms of bulimia nervosa. *British Journal of Psychiatry*, 148, 268-274.

Covey, S. (1997). *The seven habits of highly effective families*. New York: Golden Books.

Crisp, A.H. (1965). Clinical and therapeutic aspects of anorexia nervosa: Study of 30 cases. *Journal of Psychosomatic Research, 9*, 67-78.

Crisp, A.H. (1980). *Anorexia nervosa*. New York: Grune & Stratton.

Crisp, A. H., Kalucy, R.S., Lacey, J.H., & Harding, B. (1977). The long-term prognosis in anorexia nervosa: Some factors predictive of outcome. In R.A. Vigersky (Ed.), *Anorexia nervosa* (pp. 55-65). New York: Raven Press.

Crisp, A:H., Harding, B., & McGuinness, B. (1974). Anorexia nervosa: Psychoneurotic characteristics, of parents: Relationship to prognosis. *Journal of Psychosomatic Research*, 18, 167-183.

Crisp, A.H. & Toms, D.A. (1972). Primary anorexia nervosa in the male and female: a comparison of clinical features and prognosis. *British Medical Journal*, 1, 334-338.

Critser, G. (2000). Let them eat fat: The heavy truths about American obesity. *Harpers Magazine*, March, pp. 41-49.

Dacks, G. (1981) *A choice of futures*. Agincourt, Ontario: Methuen Publications.

Davies, E., & Furnham, A. (1986). The dieting and body shape concerns in adolescent females. *Journal of Child Psychology and Psychiatry*, 27, 417-428.

Deux, K., & Hanna, R. (1984). Courtship in personal columns: The influence of gender and sexual orientation. *Sex Roles*, 11, 363-376.

Diaz, P. & Gingrich, P. (1992). Crisis and Community in Rural Saskatchewan. In D.A. Hay & G.S. Basran (Eds.) *Rural Sociology in Canada*. Don Mills, Ontario: Oxford University Press.

Dickerson, M.O. (1992) *Whose north? Political change, political development, and self-government in the Northwest Territories*. Vancouver: UBC Press.

DiNicola,V.F. (1990a). Anorexia multiformed: Self-starvation in historical and cultural context: Part I. Self-starvation as a historical chameleon. *Transcultural Psychiatric Research Review*, 27, 165-196.

DiNicola, V.F. (1990b). Anorexia multiforme: Self-starvation in historical and cultural context: Part II. Anorexia nervosa as a culture-reactive syndrome. *Transcultural Psychiatric Research Review*, 27, 165-196

Driedeger, L.(1991). *The urban factor: Sociology of Canadian cities*. Toronto: Oxford University Press.

Dykens, E.M., & Gerrard, M. (1986). Psychological profiles of purging bulimics, repeat dieters, and controls. *Journal of Consulting and Clinical Psychology,* 54, 283-288.

Dywers, J., Feldman, J., Seltzer, C., & Mayer, J. (1969). Body image in adolescents: Attitudes toward weight and perception of appearance. *Journal of Nutrition Education,* 1, 14-19.

Edmonton Journal Article on *Male eating disorder* (April 2000) author unknown.

Engeland, H. van, der Ham, T.H.van, Furth, E.F. van, & Strien, D.N.van (1995). The Utrecht prospective longitudinal studies on eating disorders in adolescence: Course and predictive power of personality and family variables. In H.C. Steinhausen (ed.) *Eating disorders in adolescence*. (pp. 301-338).

Ensminger, M.E. & Juon, H.S. (1998). Transition to adulthood among high-risk youth: In R. Jessor (ed). *New perspectives on adolescent risk behavior*. Cambridge: Cambridge University Press.

Epling, W.F. & Pierce, W.D. (1991) *Solving the anorexia puzzle: A scientific approach*. Toronto: Hogrefe and Huber Publishers.

Eisler, I., & Szmukler, G.I. (1985). Social class a confounding variable in the Eating Attitudes Test. *Journal of Psychiatric Research, 19*, 171-176.

Erickson, E.H. (1963). *Childhood and society*. 2nd Edition. New York: Norton

Fabian, L.J., & Thompson, J.K. (1989). Body image and eating disturbance in young females. *International Journal of Eating Disorders*, 8, 63-74.

Fairburn, C.G., Welch, S.L., Norman, P.A., O'Connor, M.E. & Doll, H.E. (1996). Bias and bulimia nervosa: How typical are clinic cases? *American Journal of Psychiatry*, 153, 386-391.

Faust, J. (1987). Correlates of drive for thinness in young female adolescents. *Journal of Clinical Child Psychology*, 16, 313-319.

Fichter, M.M., & Quadfieg, N. (1995). Comparative studies on the course of eating disorders in adolescents and adults. Is age at onset a predictor of outcome? In H.C. Steinhausen (Ed.). *Eating Disorders in Adolescence*. New York: Walter de Gruyter.

Field, A.F., Wolf, A.M., Herzog, D.B., Cheung, L., & Colditz, G.A. (1993). The relationship of caloric intake to frequency of dieting among preadolescent and adolescent girls. *Journal of the American Academy of Child and Adolescent Psychiatry*, 32, 1246-1252.

Flament, M., Ledoux, S., Jeammet, P. Choquet, M., & Simon, Y. (1995). A population study of bulimia nervosa and subclinical eating disorders in adolescence. In H.C. Steinhausen (Ed.). *Eating Disorders in Adolescence*. New York: Walter de Gruyter.

Freedman, R. (1988) *Beauty bound*. London: Lexington Books

French, S.A., Story, M., Downes, B., Resnick, M.D., & Blum, R.W. (1995). Frequent dieting among adolescents: psychosocial and health behavior correlates. *American Journal of Public Health*, 85 (5), 695-701.

Freud, A. (1958). Adolescence. *Psychoanalytic Study of the Child*, 16, 255-278.

Freud, S. (1935). The standard edition of the complete works of Sigmund Freud. *Volume I: Pre-psychoanalytic publications and unpublished drafts*. London: Hogarth Press (1966 reprint).

Fromm, E. (1974). *On man himself*. New York: J.J.Ives and Company.

Furth, E.F.van (1991). *Parental expressed emotion and eating disorders*. Utrecht: Elinkwijk.

Garfinkel, P.E. & Garner, D.M. (1982). *Anorexia nervosa: A multidimensional perspective*. New York: Brunner/Mazel.

Garfinkel, P.E., Garner, D.M., Rose, J., Darby, P., Brandes, J.S., O'Hanlon, J., & Walsh, N. (1983). A comparison of characteristics in the families of patients with anorexia nervosa and normal controls. *Psychological Medicine*, 13, 821-828.

Garfinkel, P.E., Lin, E. Goering, P., Spegg, C., Goldbloom, D.S., Kennedy, S., Kaplan, A.S., & Woodside, B. (1995). Bulimia nervosa in a Canadian community sample:

prevalence and comparison of subgroups. *American Journal of Psychiatry*, 152 (2), 1052-1058.

Garner, D.M. (1991). *The Eating Disorder Inventory – 2 professional manual*. Odessa, FL: Psychological Assessment Resources Inc.

Garner, D.M., Garfinkel, P.E., & Olmstead, M.P. (1983). An overview of sociocultural factors in the development of anorexia nervosa. In D.V. Darby, P.E. Garfinkel, D.M. Garner & I.V. Coscina (Eds.), *Anorexia nervosa: Recent developments in research* (pp. 65-82). New York: Liss.

Garner, D.M., Olmstead, M.P, & Garfinkel, P.E. (1983). Does anorexia nervosa occur on a continuum? *International Journal of Eating Disorders*, 2, 11-20.

Garner, D.M., & Bemis, K.M. (1985) *Cognitive therapy for anorexia nervosa*. In Garner, D.M. (1991), *The Eating Disorder Inventory – 2 professional manual*. Odessa, FL: Psychological Assessment Resources Inc.

Garner, D.M., & Garfinkel, P.E. (1979) The Eating Attitudes Test: An index of symptoms of anorexia nervosa. *Psychological Medicine, 9*, 273-279.

Garner, D.M.,& Garfinkel, P.E. (1980). Socio-cultural factors in the development of anorexia nervosa. *Psychological Medicine, 9*, 273-279.

Garner, D.M., & Garfinkel, P.E. (1985) *Handbook of psychotherapy for anorexia nervosa and bulimia*. New York: Guilford Press.

Garner, D.M., & Olmsted, M.P. (1984) *The Eating Disorder Inventory manual*. Odessa, FL: Psychological Assessment Resources Inc.

Garner, D.M., Garfinkel, P.E., Rockert, W., & Olmstead, M.P. (1987). A prospective study of eating disturbances in the ballet. *Psychotherapy and Psychosomatics*, 48, 170-175.

Garner, D.M., Olmstead, M.P., Davis, R., Rockert, W., Goldbloom, D., & Eagle, M. (1990). The association between bulimic symptoms and reported psychopathology. *International Journal of Eating Disorders*, 9, 1-15.

Garner, D.M. & Wooley, S.C. (1991). Confronting the failure of behavioral and dietary treatments for obesity. *Clinical Psychologist Review*, 11, 729-780.

Garner D.M., Olmsted, M.P., & Polivy, J. (1983a). Development and validation of a multidimensional eating disorder inventory for anorexia nervosa and bulimia. *International Journal of Eating Disorders*, 2 (2), 15-34.

Garner D.M., Olmsted, M.P., Polivy, J., & Rockert, W. (1984). Comparison between weight-preoccupied women and anorexia nervosa. *Psychosomatic Medicine*, 46, 255-266.

Garrow, J. (1978). The regulations of energy expenditure in man. In G. Bray (1978). *Recent Advances in Obesity Research, II, Proceedings of the Second International Congress in Obesity*. London: Newman.

Gleaves, D.H., Lowe, M.R., Snow, A.C., Green, B.A. & Murphy-Eberenz, K.P. (2000). Continuity and discontinuity models of bulimia nervosa: A taxometric investigation. *Journal of Abnormal Psychology*, Vol.109, No. 1, pp. 56-68.

Gold, R.M. (1973). Hypothalamic obesity: The myth of the ventromedial nucleus. *Science*, 182, 488-490.

Goodsitt, A. (1977). Narcissistic disturbances in anorexia nervosa. In: S.C. Feinstein & P.L Giovacchini (Eds.), *Adolescent psychiatry* (Vol.5, pp. 304-312). New York: Jason Aaronson.

Gonzalez, M.F., & Deutsch, J.A. (1981). Vagotomy abolishes cues of satiety produced in gastric distension. *Science*, 212, 1283-1284.

Gordon, R.A. (1990). *Anorexia and bulimia: Anatomy of a social epidemic*. Cambridge, MA.: Basil Blackwell.

Government of Canada (1999). *Survey of household spending in 1998*. Ottawa: Statistics Canada.

Government of Canada (1991). *Canadian fitness survey*. Ottawa: Minister of Supply and Services Canada.

Grange le, D., Telch, C.F., & Agras, W.S. (1997). Eating and general psychopathlogy in a sample of Caucasian and ethnic minority subjects. *International Journal of Eating Disorders*, 21 (3), 285-293.

Gresko, R.B. & Rosenvinge, J.H. (1998). The Norwegian school-based prevention-model: Development and evaluation. In W.Vandereycken and G.Noordenbos (Eds.). *The prevention of eating disorders*. New York: New York University Press. (pp. 75-98).

Greer, G. (1984). *Sex and destiny*. New York: Harper and Row.

Griffiths, J.D., & Payne, P.R. (1976). Energy expenditure in small children of obese and non-obese mothers. *Nature*, 260, 698-700.

Gull, W.W. (1874). Anorexia nervosa. *Trans Clinical Society*, (London) 7, 22-28.

Gustafson-Larson, A. & Terry, R. (1992). Weight-related concerns and behaviors of fourth-grade children. *Journal of American Dietetic Association*, 92, 818-22.

Guthrie, H.A. (1979). *Introductory nutrition, fourth edition*. St. Louis: C.V.Mosby Company.

Haimes, A.L., & Katz, J.L. (1988). Sexual and social maturity versus social conformity in restricting anorectic, bulimic, and borderline women. *International Journal of Eating Disorders*, 7, 331-334.

Hall, A. & Brown, L.B. (1983). A comparison of the attitudes of young anorexia patients with non-patients with those of their mothers. *British Journal of Medical Psychology*, 56, 39-48.

Hall, A., Leibrich, J., Walkley, F. & Welch, G. (1986). Investigation of "weight pathology" of 58 mothers of anorexia nervosa patients and 204 mothers of schoolgirls. *Psychological Medicine*, 16, 71-76.

Halmi, K.A. (1974). Anorexia nervosa: Demographic and clinical features in 94 cases. *Psychosomatic Medicine*, 36, 18-25.

Halmi, K.A. (1978) Anorexia nervosa; recent investigations. *Annual Review of Medicine*, 29, 137-148.

Halmi, K., Falk, J.R., & Schwartz, E. (1981). Binge eating and vomiting: A survey of a college population. *Psychological Medicine, 11*, 697-706.

Harris, J.R. (1998). *The nurture assumption*. New York: Simon & Schuster.

Hasan, M.K. & Tibbetts, R.W. (1977). Primary anorexia nervosa (weight phobia) in males. Postgraduate Medical Journal, 53, 145-151.

Hatsukami, D., Mitchell, J.E., Eckert, E.D., & Pyle, R. (1986). Characteristics of patients with bulimia only, bulimia with affective disorder, and bulimia with substance abuse problems. *Addictive Behaviors*, 11, 399-406.

Heilbrun, A.B., Jr., & Bloomfield, D.L. (1986). Cognitive differences between bulimic and anorexic females: Self-control deficits in bulimia. International Journal of Eating Disorders, 5, 209-222.

Heilbrun, A.B., Jr., & Hausman, G.A. (1990). Perceived enhancement of body size in women sharing anorexic psychological characteristics: The role of self-preoccupation. *International Journal of Eating Disorders, 9*, 283-291.

Herman, C.P. and Polivy, J. (1984). A boundary model for the regulation of eating. In A.J. Stunkard and E. Stellar (eds.). *Eating and its Disorders*. New York: Raven Press.

Henderson,M. & Freeman, C.P.L. (1987) A self-rating scale for bulimia: The "BITE." *British Journal of Psychiatry, 150*, 18-24.

Hetherington, A.W., & Ranson, S.W. (1939), Experimental hypothalamus and hypophyseal obesity in the rat. Proceedings of the Society for Experimental *Biology and Medicine*, 41, 465-466.

Herzog, D.B., Norman, D.K., Rigotti, N.A. & Pepose, M. (1986) Frequency of bulimic behaviors and associated social maladjustments in female graduate students. *Journal of Nervous and Mental Disorder*, 173, 734-737.

Herzog, D.B., Keller, M.B., Lavori, P.W., & Ott, I.L. (1988). Short-term prospective study of recovery in bulimia nervosa. *Psychiatry Research*, 23, 43-45.

Herzog, D.B., Keller, M.B. Lavori, P.W., & Bradburn, I.S. (1991). Bulimia nervosa in adolescence. *Developmental and Behavioral Pediatrics*, 12, 191-195.

Hill, A.J., Weaver, C. & Blundell, J.E. (1990). Dieting concerns of 10-year old girls and their mothers. *British Journal of Clinical Psychology*, 29, 346-348.

Hill, A.J. (1993). Preadolescent dieting: implications for eating disorders. *International Review of Psychiatry*, 5, 87-100.

Hill, A.J. (1993). Fat, friendless and unhealthy: 9- year-old children's perception of body shape stereotypes. In H. C. Steinhausen (Ed.) *Eating disorders in adolescence*. New York: Walter de Gruyer.

Hintz, L.D. & Williamson, D.A. (1987). Bulimia and depression: A review of affective variant hypothesis. *Psychological Bulletin*, 102, 150-158.

Hoek, H.W. (1991). The incidence and prevalence of anorexia nervosa and bulimia nervosa in primary care. *Psychological Medicine*, 21 (2), 455-460.

Hoek, H.W., Bartelds, A.I., Bosveld, J.J., Graaf, Y. van der, Limpens, V.E., Maiwald, M., & Spaaij, C.J. (1995). Impact of urbanization on detection rates of eating disorders. *American Journal of Psychiatry*, 152 (9), 1272-8.

Holland, W.W. & Stewart, S. (1990). *Screening in Health Care: Benefit or Bane?* London: Nuffield Provincial Hospitals Trust.

Houben, M.E., Pierloot, R. & Vandereycken, W. (1989). The perception of interpersonal relationships in families of anorexia nervosa patients compared with normals. In W. Vandereycken, E. Kog, & J. Vanderlinden (Eds.). *The family approach to eating disorders*. New York: PMA Publishing, pp. 147-160.

Holland, A.J., Sicotte, N. & Treasure, J. (1988). Anorexia nervosa: Evidence for a genetic basis. *Journal of Psychosomatic Research*, 32, 561-571.

Hsu, G.L.K. (1990) *Eating disorders*. New York: Guilford Press.

Hudson, J.I., Pope, H.G., & Jonas, J.M. (1987). A controlled family history study of bulimia. *Psychological Medicine*, 17, 883-890.

Hudson, J.I., Pope, H.G., Wurtman, J., Yurgelun-Todd, D., Mark, S., & Rosenthal, N.E. (1988). Bulimia in obese individuals: Relationship to normal-weight bulimia. *Journal of Nervous and Mental Disease*, 176, 144-152.

Hurley, J. Palmer, R., & Stretch, D. (1990). The specificity of the Eating Disorders Inventory: A reappraisal. *International Journal of Eating Disorders*, 9, 419-24.

Jakobovits, d. Halstead, P., Kelley, L., Roe, D.A., & Young, C.M. (1977). Eating habits and nutrient intakes of college women over a thirty-year period. *Journal of American Dietetic Association*, 71, 405-411.

James, J. E. (1989). *A view from the other side: the experience of anorexia nervosa*. PhD thesis, University of Alberta.

Jarmen, F.C., Rickards, W.S., & Hudson, I.L. (1991). Late adolescent outcome of early onset anorexia nervosa. *Journal of Paediatry and Child Health*, 27, 221-227.

Jeammet, P., Brechon, G., Payan, C., Gorge, A., & Fermanian, J. (1991). Le devenir de L'anorexie mentale: une etude prospective de 129 patients evalues au moins 4 ans apres leur premiere admission. *Psychiatrie de l'enfant*, 24, 381-442.

Jessor,R.(1998). *New perspectives on adolescent risk behavior*. Cambridge: Cambridge University Press.

Johnson, C. & Flach, A. (1985). Family characteristics of 105 patients with bulimia. *American Journal of Psychiatry*, 142, 1321-1324.

Johnson, C.L., & Connors, M.E. (1987). *The etiology and treatment of bulimia nervosa: A biopsychosocial perspective*. New York: Basic Books.

Johnson, C.L., Tobin, D.L., & Enright, A. (1989). Prevalence and borderline characteristics in an eating disorder population. *Journal of Clinical Psychiatry*, 50, 9-15.

Kassett, J.A., Gershon, E.S., & Maxwell, M.E. (1989). Psychiatric disorders in the first-degree relatives of probands with bulimia nervosa. *American Journal of Psychiatry*, 146, 1468-1471.

Katzman, M.A., & Waller, G. (1998). Gender of the therapist; Daring to ask the question. In W. Vandereycken and P.J.V. Beaumont (Eds.). *Treating eating disorders: Ethical, legal and personal issues*. New York: New York University Press.

Kendler, K.S., MacLean, C., Neale, M. Kessler, R. Heath, A. & Eaves, L. (1991). The genetic epidemiology of bulimia nervosa. *American Journal of Psychiatry*, 148, 1627-1637.

Keys, A., Brozek, J., Henschel, Q., Mickelsen, O., & Taylor, H. L. (1950). *The biology of human starvation (Vol. I)*. Minneapolis: University of Minnesota Press.

Killeen, J.D., Taylor, C.B., Hammer, L.D., Litt, I., Wilson, D.M., Rich, T., Hayward, C., Simmonds, B., Kraemer, H., & Varady, A. (1993). An attempt to modify unhealthful eating attitudes and weight regulation practices of young adolescent girls. *International Journal of Eating Disorders*, 13, 369-84.

King, M.B., & Mezey, B. (1987). Eating behavior in male jockeys. *Psychological Medicine*, 17 249-253.

Kleinfeld. J. (1994) The small high school question – Alaska's uneasy compromise. *The Northern Review*, 12/13, 70-80.

Kolodny, N.J. (1987). *When food's a foe*. Boston: Little, Brown & Company.

Kron, L., Katz, J.L., Gorzynski, G. & Wuner, H. (1978) Hyperactivity in anorexia nervosa. A fundamental clinical feature. *Comprehensive Psychiatry*, 19, 433-440.

Lacey, J.H. & Evans, C.D.H. (1986). The impulsivist: A multi impulsive personality disorder. *British Journal of Addiction, 81*, 641-649.

Laessle, R.G., Kittl, S., Fichter, M.M., Witchen, H.U., & Pirke, K.M. (1987). The specific psychopathology of bulimia nervosa: A comparison with restrained and unrestrained (normal) eaters. *Journal of Consulting and Clinical Psychology*, 57, 772-775.

Laverty, J.C. (1995). *The Propensity for eating disorders among junior high school males and females*. Unpublished Masters thesis. Edmonton: University of Alberta.

Lawrence, M. & Dana, M. (1990). *Fighting food.* London: Penquin Books.

Lee, S., Hsu, G., & Wing, Y.K. (1992). Bulimia nervosa in Hong Kong Chinese patients. *British Journal of Psychiatry*, 161, 545-551.

Leibowitz, S.F. (1983) Hypothalic catacholamine systems controlling behavior: A potential model for anorexia nervosa. In P.L. Darby, P.E. Garfinkel, D.M. Garner and D.V. Coscina. (eds). *Anorexia nervosa: recent developments in research*. New York: A. R. Liss.

Leites, N. (1979). *Depression and masochism.* New York: WW Norton & Company.

Levenkron, S. (1982) *Treating and overcoming anorexia nervosa*. New York: Warner Books.

Levine, M.P. & Smolak, L. (1996). Media as a context for the development of disordered eating. In L. Smolak, M.P. Levine, and R. Striegel-Moore. (eds.) *The developmental psychopathology of eating disorders*. (pp.235-57). Mahwah, NJ: Lawrence Erlbaum Associates.

Levine, M.P. & Smolak, L. (1998). The mass media and disordered eating: Implications for primary prevention. In W.Vandereycken and G.Noordenbos (Eds.). *The prevention of eating disorders*. New York: New York University Press. (pp. 23-56).

Ley, P. (1980). The psychology of obesity: Its causes, consequences, and control. In S. Rachman (Ed.) *Contributions to Medical Psychology, Volume 2*. Oxford: Pergmanon

Long, T.J. (1987) Anorexia nervosa. *Primary Care*, 14, 177-201.

Lucas, A.R., Beard, M., O'Fallon, W.M., & Kurland, L.T. (1991). 50-year trends in the incidence of anorexia nervosa in Rochester, Minn.: A population based study. *American Journal of Psychiatry*, 148(7), 917-922.

Luteijn, F.N., Starren, J., & Dijk, H. van (1975, 1985). *Handleiding bij de NPV*. Lisse: Swets & Zeitlinger B.V.

Mahler, M.S. (1963). Thoughts about development and individuation. *Psychoanalytic Study of the Child*, 18, 307-324.

Maloney, J.J., & Ruedisueli, G. (1993). The epidemiology of eating problems in nonreferred children and adolescents. *Child and Adolescent Psychiatric Clinics of North America*, 2 (1), 1-13.

Maloney, M. McGuire, J., Daniels, S., & Specker, B. (1989). Dieting behavior and eating attitudes in children. *Pediatrics*, 84, 482-9.

Mann, A.H., Wakeling, A., Wood, K., Monck, E., Dobbs, R., & Szumkler, G. (1983). Screening for abnormal eating attitudes and psychiatric morbidity in an unselected population of 15-year old schoolgirls. *Psychological Medicine, 13*, 573-580.

Markstrom-Adams, C., & Spencer, M.B. (1994) Interventions with Minority Adolescents. In S.L. Archer (1994). *Interventions for adolescent identity development*. London: Thousand Oaks.

Marcus, M.D., Wing, R.R., & Lamparski, D.M. (1985). Binge eating and dietary restraint in obese patients. *Addictive Behaviors*, 10, 163-168.

Marcus, M.D., & Wing, R. R. (1987). Binge eating among the obese. *Annals of Behavioral Medicine*, 9, 23-27.

Martin, M.C. & Kennedy, P.F. (1994). Social comparison and the beauty of advertising models: The role of motives for comparison. *Advances in Consumer Research*, 21, 365-371.

Maslow, A. (1968). *Toward a psychology of being*. Princeton, N.J.: Van Nostrand Reinhold.

McKenzie, J.F. & Smeltzer, J.L.(1997). *Planning, implementing, and evaluating health promotion programs, second edition*. Needham Heights, MA: Allyn & Bacon.

Mead, M. (1942). *And keep your powder dry*. New York: Morrow.

Mendelson, B.K. & White, D.R. (1985). Development of self-body-esteem in overweight youngsters. *Developmental Psychology*, 21, 90-96.

Milkman, H. & Sunderwirth, S. (1983). The chemistry of craving. *Psychology Today*, October, 36-44.

Miller, M.N., Verhegge, R., Miller, B.E., & Pumariega, A.J. (1999). Assessment of risk of eating disorders among adolescents in Appalachia. *Journal of the American Academy of Child and Adolescent Psychiatry*, 38 (4), 437-43.

Mintz, P.A., & Betz, I.M. (1988) *Weight Management and Eating and Exercise Questionnaire*. Odessa, FL: Psychological Assessment Resources Inc.

Mitchell, J.E. & Goff, G. (1984). Bulimia in male patients. *Psychosomatics*, 25 (12), 909-913.

Mitchell, J.E., Hatsukami, D., Pyle, R.L., Eckert, E.D., & Soll, E. (1987). Late onset bulimia. *Comprehensive Psychiatry*, 28, 323-328

Mitchell, J.J. (1973). *Human Life: The First Ten Years*. Toronto: Holt, Rinehart & Winston Co. of Canada.

Morena, A.B, & Thelan, M.H. (1993). A primary prevention programme for eating disorders in a junior high school population. *Journal of Youth and Adolescence*, 22, 109-24.

Mori, D., Plliner, P., & Chaiken, S. (1987). Eating lightly and the self-presentation of femininity. *Journal of Personality and Social Psychology*, 53, 693-702.

Moriarty, C., Shore, R., & Maxim, N. (1990). Evaluation of an eating disorder curriculum. *Evaluation and Programme Planning* , 13, 407-413.

Morgan, R. (1984). *The Anatomy of Freedom*. New York: Anchor Books.

Morton, R. (1694). *Phthisiologica: or a treatise of consumptions*. London: Smith and Walford.

Muir, B.L. (1991). *Health status of Canadian Indians and Inuit, 1990*. Ottawa: Health and Welfare Canada.

Murphy, L.L., Conoley, J.C., Impara, J.C. (Eds.) *Tests in Print IV: An index to tests, test reviews, and the literature on specific tests* (1994). Lincoln, Nebraska: University of Nebraska Press.

Nisbett, R.E. (1974). Hunger, obesity, and the ventromedial hypothalamus. *Psychological Review*, 79, 433-453.

Norman, D.K., & Herzog, D.B. (1984). Persistent social maladjustment in bulimia: A one-year follow-up. *American Journal of Psychiatry*, 141, 444-446.

Nylander, I. (1971). The feeling of being fat and dieting in a school population. *Acta Sociomedia Scandinavica*, 3, 17-26.

Omichenski, L. (1992). *You count, calories don't*. Winnipeg: Hyperion Press.

Orbach, S. (1993). Unpublished lecture presented at *Eating Disorders Conference*, Edmonton, Alberta, May, 1993.

Orford, J. (1985). Excessive Appetites. New York: W.W. Norton & Company.

Owen, S.E.H. (1973). The projective identification of the parents of patients suffering from anorexia nervosa. *Australian and New Zealand Journal of Psychiatry*, 7, 285-290.

Paxton, S.J. (1993). A prevention programme for disturbed eating and body dissatisfaction in adolescent girls: A one-year follow-up. *Health Education Research*, 8, 43-51.

Paxton, S.J., Schutz, H.K., Wertheim, E.H., & Muir, S.L. (1999). Friendship clique and peer influences on body image concerns, dietary restraint, extreme weight-loss behaviors, and binge eating in adolescent girls. *Journal of Abnormal Psychology*, 12, 255-266.

Peterson, A.C., Schulenberg, J.E., Abramowitz, R.H., Offer, D. & Jarcho, H.D. (1984). A self-image questionnaire for young adolescents (SIQY) reliability and validity studies. *Journal of Youth and Adolescence*, 13, 385-401.

Pike, K.M. & Rodin, J. (1991). Mothers, daughters, and disordered eating. *Journal of Abnormal Psychology*, 100, 198-204.

Piran, N., Kennedy, S., Garfinkel, P.E., & Owens, M. (1985). Affective disturbance in eating disorders. *Journal of Nervous and Mental Disease*, 173, 395-400.

Phillips, K.A., Kim, J.M., & Hudson, J.I. (1995). Body image disturbance in body dysmorphic disorder and eating disorders: Obsessions or delusions? *The Psychiatric Clinics of North America*, 18 (2), 317-334.

Philbrick, J.T., Connelly, J.E., & Wofford, A.B. (1996). The prevalence of mental disorders in rural office practice. *Journal of General Internal Medicine*, 11(1), 9-15.

Polivy, J. & Herman, C.P. (1985). Dieting and Bingeing: A causal analysis. *American Psychologist*, 40, 193-201.

Ponting, J.R. (1997). *First Nations in Canada: Perspectives on Opportunity, Empowerment, and Self-Determination*. Toronto: McGraw-Hill Ryerson

Pumeriega, A.J. (1986) Acculturation and eating attitudes in adolescent girls: a comparative and correctional study. *Journal of the American Academy of Child Psychiatry*, 25, 276-279.

Pyle, R.L., Halvorson, P.A., Neuman, P.A., & Mitchell, J.E. (1986). The increasing prevalence of bulimia in freshmen college students. *International Journal of Eating Disorders*, 5, 631-647.

Pyle, R.L., Mitchell, J.E., & Eckert, E.D. (1981). Bulimia: a report of 34 cases. *Journal of Clinical Psychiatry*, 42, 60-64.

Raciti, M.C., & Norcross, J.C. (1987). The Eat and EDI: Screening, interrelationships, and psychometrics. *International Journal of Eating Disorders, 6*, 579-586.

Rampling,D.(1985). Ascetic ideals and anorexia nervosa. *Journal of Psychiatric Research, 19*, 89-94.

Randhawa, B.S. (1992) Rural education: Opportunities and issues. In D.A. Hay & G.S. Basran (Eds.) *Rural Sociology in Canada*. Don Mills, Ontario: Oxford University Press.

Rastam, G. (1992). Anorexia nervosa in 51 Swedish adolescents: Premorbid problems and comorbidity. *Journal of the American Academy of Child and Adolescent Psychiatry*, 31 (5), 819-829.

Rastam, M., Gillberg, C. & Gillberg, I.C. (1995). Anorexia nervosa 6 years after onset. Part II. Comorbid psychiatric problems. *Comprehensive Psychiatry*, 36, 45-56.

Rathner, G. & Messner, K. (1993). Detection of eating disorders in a small rural town: an epidemiological study. *Psychological Medicine*, 23 (1), 175-184.

Ratnasuriya, R.H., Eisler, I., Szmukler, G.I., Russell, G.F.M. (1991). Anorexia nervosa: Outcome and prognostic factors after 20 years. *British Journal of Psychiatry, 158*, 495-502.

Research Directorate (1994). *Customized data from the 1991 Aboriginal People's Survey*. Ottawa: Royal Commission on Aboriginal Peoples.

Richardson, S.A., Hastorf, A.H., Goodman, N., & Dornbusch, S.M. (1961). Cultural uniformity in reaction to physical disabilities. *American Sociological Review*, 26, 241-247.

Roberts, M.J., & Russo, R. (1999). *A student' guide to Analysis of Variance*. London: Routledge.

Rosen, L.W. (1989). Prevention of eating disorders. *National Anorexic Aid Society Newsletter*, 12, 1-3.

Rosen, L.W., Shafer, C.L., Dummer, G.M., Cross, L.K., Deuman, G.W. & Malmberg, S.R. (1988) Prevalence of pathogenic weight-control behaviors among Native-American women and girls. *International Journal of Eating Disorders*, 7, 807-811.

Rosen, J.C., Silberg, N.T., & Gross, J. (1988). Eating Attitudes Test and Eating Disorders Inventory: Norms for adolescent girls and boys. *Journal of Consulting and Clinical Psychology*, 56, 305-308.

Rosenbaum, M.B. (1993). The changing body image of the adolescent girl. In M. Sugar (ed). *Female Adolescent Development* (pp.138-156). New York: Brunner/Mazel Inc.

Rosenberg, M. (1989). *Society and the Adolescent Self-Image*. Middleton: Wesleyan Univeristy Press.

Rosiechuk, S. (1987). *Eating attitudes, anxiety, and family patterns in a sample of ballet students*. Unpublished Masters thesis. Edmonton: University of Alberta.

Ross, H.E. & Ivis, F. (1999) Binge eating and substance use among male and female adolescents. *International Journal of Eating Disorders*, 26 (3), 245-260.

Ross, R. (1992) *Dancing with a ghost*. Toronto: Reed Books Canada

Rothenberger, A., Dumais-Huber, C., Moll, G.H., & Woerner, W. (1995). Psychophysiology of anorexia nervosa. In H. C. Steinhausen (Ed.) *Eating Disorders in Adolescence*. New York: Walter de Gruyer.

Rotherman-Borus, M.J. & Wyche, K.F. (1994). Ethnic Differences in Identity Development in the United States. In S.L. Archer (1994) Interventions for Adolescent Identity Development

Rowland, N. & Antelman, S. M. (1976). Stress induced hyperphagia and obesity in rats: A possible model for understanding human obesity. *Science*, 191, 310-312.

Rubel, J.B. (1986). Burn-out and eating disorders therapists. In F.E.F. Larocca (ed.). *Eating Disorders: Effective Care and Treatment* (pp.233-46). St. Louis: Ishiyaku Euro-America.

Rubington, M. Weinberg, A. (1968). *Deviance, the Interactionist Perspective: Text and Readings in the Sociology of Deviance*. London: Collier-Macmillan.

Russell, G.F.M. (1970). *Anorexia Nervosa: Its identity as an illness and its treatment*. In Garner, D.M. (1991), *The Eating Disorder Inventory – 2 professional manual*. Odessa, FL: Psychological Assessment Resources Inc.

Russell, G.F.M. (1979). Bulimia Nervosa: an ominous variant of anorexia nervosa. *Psychological Medicine*, 9, 429-448.

Russell, G.F.M. (1993). The social psychiatry of eating disorders. In D. Bhurga and J. Leff (Eds.) *Social Psychiatry*, 273-297. Oxford Blackwell Scientific Publications.

Sacker, I.M. & Zimmer, M.A. (1987) *Dying to be thin: Understanding and defeating anorexia nervosa and bulimia-a practical lifesaving guide*. New York: Warner Books.

Sackett, D.L, & Holland, W.W. (1975). Controversy in the detection of disease. *Lancet*, 1, 357-9.

Sarigiani, P.A., Camerena, & P.M., Peterson, A.C. (1993) Cultural Factors in Adolescent Girls'Development: The Role of Ethnic Minority Group Status. In M. Sugar (ed). *Female Adolescent Development* (pp.138-156). New York: Brunner/Mazel Inc.

Schinke, S. (1997). Review of the Eating Disorder Inventory – 2. In Teddy Maddox (ed). Tests: a comprehensive reference for assessments in psychology. Austin, Texas: PRO-ED, Inc.

Schmidt, U., Hodes, M., & Treasure, J. (1992). Early onset bulimia nervosa: Who is at risk? A retrospective case-control study. *Psychological Medicine*, 22, 623-628.

Schwartz, H.J. (1988). (Ed.). *Bulimia: Psychoanalytical treatment and theory*. Madison: International Universities Press.

Schoemaker, C. (1998). The principles of screening for eating disorders. In W. Vandereycken and G. Noordenbos (Eds.). *The Prevention of Eating Disorders*. New York: New York University Press.

Schoemaker, C., Strien, T. van, Starek, C., van der. (1994). Validation of the Eating Disorders Inventory in a non-clinical population using transformed and untransformed responses. *International Journal of Eating Disorders, 15, 387-93.*

Schoemaker, C. Verbraak, M. Bretteler, R. and Van der Staak, C. (1997). The discriminant validity of the Eating Disorder Inventory –2. *British Journal of Clinical Psychology*, 36, 627-9.

Scott, R. & Scott, W.A. (1998). *Cross Cultural Similarities and Differences*. London: Routledge Publishing.

Seeger, G., & Lehmkuhl (1993). Hirenelektrische Korrelate der Verarbeitung affektiver versus neutraler Reize bei Jugendlicken mit Anorexia nervosa. In H.C. Steinhausen (1995) *Eating Disorders in Adolescence*. New York: Walter de Gruyter.

Seid, R.P. (1989). *Never Too Thin*. Prentice Hall Press.

Selvini-Palozzoli, M.P. (1974). *Self-Starvation*. London: Chaucer Publishing Co.

Shaw, B.F. & Garfinkel, P.E. (1990). 'Research problems in the eating disorders'. *International Journal of Eating Disorders*, 9, 545-55.

Shissel, B. (1992). Rural Crime and Policing. In D.A. Hay & G.S. Basran (Eds.) *Rural Sociology in Canada*. Don Mills, Ontario: Oxford University Press.

Shils, M.E. & Young, V.R. (Eds.) *Modern Nutrition in Health and Disease-Seventh Edition* (1988). Philadelphia: Lea & Febiger.

Skinner, B.F. (1952). *Human Behavior and Science*. Cambridge: Harvard University Press.

Shisslak, C. Crago, M., McKnight, K., Estes, L, Gray, N., & Parnaby, O. (1998&1999). Potential risk factors associated with weight control behaviors in elementary and middle school girls. *Journal of Psychosomatic Research*, in press.

Shoemaker, C. The principles of screening for eating disorders. In W. Vandereycken & G. Noordenbos (Eds.) *The Prevention of Eating Disorders*. New York: New York University Press. (pp.187-213).

Shore, R.A., & Porter, J.E. (1990). Normative and reliability data for 11 to 18 year olds on the Eating Disorder Inventory. *International Journal of Eating Disorders, 9*, 201-207.

Sjostedt, J.P., Schumaker, J.F., & Nathawat, S.S. (1998). *Journal of Social Psychology*, 138 (3), 351-7.

Slade, P.D. (1973) A short Anorexic-Behavior Scale. *British Journal of Psychiatry*, 122, 83-85.

Slade, P.D. (1982) Towards a functional analysis of anorexia nervosa and bulimia. *British Journal of Clinical Psychology*, 21, 167-179. In Garner, D.M. (1991), *The Eating Disorder Inventory – 2 professional manual*. Odessa, FL: Psychological Assessment Resources Inc.

Slade, P.D., & Dewey, M.E. (1982) Development and preliminary validation of SCANS: A screening instrument for identifying individuals at risk for developing anorexia and bulimia nervosa. *International Journal of Eating Disorders, 5*, 517-538.

Smead, V.S. (1985b). Labeling eating disorders: Weighing costs and benefits. *Transactional Analysis Journal*, 15, 17-20.

Smolak, L., Levine, M.P., & Schermer, F. (1998). Lessons from lessons: An evaluation of an elementary school prevention program. In W. Vandereycken, and G. Noordenbos (Eds.) *The Prevention of Eating Disorders*. New York: New York University Press. (pp. 137-172).

Smolak, L. & Levine, M.P. (1994b). Toward an empirical basis for primary prevention eating problems with elementary school children. *Eating Disorders: The Journal of Treatment and Prevention*, 2, 293-307.

Smolak, L. & Levine, M.P. (1996a). Adolescent transitions and development of eating problems. In L. Smolak, M.P. Levine, and R. Striegel-Moore. (eds.) *The Developmental Psychopathology of Eating Disorders: Implications for Research, Prevention, and Treatment*. (pp.207-234). Mahwah, NJ: Lawrence Erlbaum Associates

Smye, V. (1999). *Needs Assessment of Eating Disorder Services in British Columbia*. Vancouver: InfoCanada.

Snow, J.T. & Harris, M.B. (1989). Disordered eating in South-western Pueblo Indians and Hispanics. *Journal of Adolescence*, 12 (3), 329-36.

Sohlberg, S., Norring, C., Holmgren, S., & Rosmark, B. (1989). Impulsivity and long-term prognosis of psychiatric patients with anorexia nervosa/bulimia nervosa. *Journal of Nervous and Mental Disease, 177*, 249-258.

Sours, J.A. (1980) *Starving to death in a sea of objects*. New York: Jason & Arronson.

Sonquist, J.A. & Dunkelberg, W.C. (1977). *Survey and Opinion Research*. New Jersey: Prentice-Hall.

Stacey, M. (2000) Why portion size matters. *Simple Living*, April, 160-164.

Stafferi, J.R. (1967). A study of social stereotype of body image in children. *Journal of Personality and Social Psychology*, 7, 101-104.

Steen, S.N., Oppliger, R.A., & Brownell, K.D. (1988). Metabolic effects of repeated weight loss and regain in adolescent wrestlers. *Journal of American Medical Association*, 260 (1), 47-50.

Steiger, H, Leung, F., & Houle, L. (1992). Relationships among borderline features, body dissatisfaction, and bulimic symptoms in nonclinical families. *Addictive Behaviors*, 17 (4), 397-406.

Steiger, H. & Stotland, S. (1995). Individual and family factors in adolescents with eating symptoms and syndromes. In H.C. Steinhausen (ed.) *Eating Disorders in Adolescence*. New York: Walter de Gruyter & Co. (pp. 49-65).

Steinberg, L. & Avenevoli (1998). Disengagement from school and problem behavior in adolescence: A developmental-contextual analysis of the influences of family and part-time work. In R. Jessor (ed.) *New perspectives on adolescent risk behavior*. Cambridge: Cambridge University Press.

Steiner, H., Sanders, M., & Ryst, E. (1995). Precursors and risk factors of juvenile eating disorders. In H.C. Steinhausen (1995). *Eating Disorders in Adolescence*. New York: Walter de Gruyter & Co.

Steinhausen, H.C. (1984). Transcultural comparison of eating attitude in young female and anoretic patients. *European Archives of Psychiatry and Neurological Science, 234*, 198-201.

Steinhausen, H.C. (1995). *Eating Disorders in Adolescence*. New York: Walter de Gruyter & Co.

Steinhausen, H.C., & Glanville, K. (1984). Follow-up studies of anorexia nervosa: A review of research findings. *Psychological Medicine*, 13, 239-249.

Steinhausen, H.C., Neumarker, D.J. & Boyadjieva, S. (1995). Transcultural Comparisons of Adolescent Eating Disorders. In H.C. Steinhausen (1995). *Eating Disorders in Adolescence*. New York: Walter de Gruyter & Co.

Steinhausen, H.C., Rauss-Mason, C., & Seidel, R. (1991). Follow-up studies of anorexia nervosa: A review of four decades of outcome research. *Psychological Medicine*, 21, 447-454.

Stewart, A. (1998). Experience with a school-based eating disorders prevention program. In W. Vandereycken, and G. Noordenbos (Eds.) *The Prevention of Eating Disorders*. New York: New York University Press. (pp. 99-136).

Stice, E. (1994). Review of the evidence for a sociocultural model of bulimia nervosa and an exploration of the mechanisms of action. *Clinical Psychology Review*, 14, 633-61.

Stice, E. & Agras, W.S. (1997) Predicting onset and cessation of bulimic behaviors during adolescence: A longtitudinal grouping analysis. *Behavior Therapy*, 29, 257-276.

Stice, E. & Agras, W.S. (1999) Subtyping bulimic women along dietary restraint and negative affect dimensions. *Journal of Consulting and Clinical Psychology*, 67, 460-469.

Stice, E., Mazotti, L., Krebs, M., & Martin, S. (1998) Predictors of adolescent dieting behaviors: A longitudinal study. *Psychology of Addictive Behaviors*, 12, 195-205.

Story, I. (1976). Caricature and impersonating the other: Observations from the psychotherapy of anorexia nervosa. *Psychiatry, 39*, 176-188.

Story, M., Rosenwinkel, K., Himes, J.H., Resnick, M., Harris, L.J., & Blum, R.W. (1991). Demographic and risk factors associated with chronic dieting in adolescents. *American Journal of Diseases of Children*, 145 (9), 994-8.

Stoutjescyk, D.A. (1990). *Eating attitudes in relation to eating disorders among high performance athletes*. Unpublished Masters thesis. Edmonton: University ofAlberta.

Striegel-Moore, R. H. (1993). Etiology of binge eating: A developmental perspective. In Fairburn, C.G. and Wilson, G.T. (eds) *Binge eating: Nature, assessment, and treatment* (pp. 144-172), New York: Guilford Press.

Striegel-Moore, R.H., Silberstein, L.R., Frensch, P., & Rodin, J. (1989). Early identification of bulimia nervosa. In W. Johnson (ed.). A prospective study of disordered eating among college students. *International Journal of Eating Disorders*, 8, 599-609.

Striegel-Moore, R.H. & Steiner-Adair, C. (1998). Primary prevention of eating disorders: Further considerations from a feminist perspective. In W.Vandereycken and G.Noordenbos (Eds.). *The Prevention of Eating Disorders*. New York: New York University Press. (pp. 1-22).

Strober, M. (1980). Personality and symptomatological features in young, nonchronic anorexia nervosa patients. *Journal of Psychosomatic Research*, 24, 353-359.

Strober, M. (1981a). A comparative analysis of personality organization in juvenile anorexia nervosa. *Journal of Youth and Adolescence*, 10, 285-295.

Strober, M. (1984). Stressful life events associated with bulimia in anorexia nervosa: Empirical findings and theoretical speculations. International Journal of Eating Disorders, 6, 171-180.

Strober, M. & Katz, J.L. (1988). Depression in the eating disorders: A review and analysis of descriptive, family, and biological findings. In D.M. Garner & P.E. Garfinkel (Eds.), *Diagnostic issues in anorexia nervosa and bulimia nervosa* (pp.80-111). New York: Brunner/Mazel.

Strober, M., Lamper, C., & Morrell, W. (1990). A controlled family study of anorexia nervos: Evidence of familial aggregation and lack of shared transmission with affective disorders. *International Journal of Eating Disorders*, 9, 239-253.

Swift, W. (1982). The long-term outcome of early onset anorexia nervosa – a critical review. *Journal of the American Academy of Child Psychiatry*, 21, 38-38.

Swift, W., & Letven, R. (1984). Bulimia and the basic fault. *Journal of the American Academy of Child and Adolescent Psychiatry*, 23, 489-497.

Sugar, M. (Ed.). *Female Adolescent Development*. (1993). New York: Brunner-Mazel

Tabachnick, B.G., & Fidell, L.S. (1989). *Using Multivariate Statistics-Second Edition*. New York: Harper & Row Publishers, Inc.

Tessier, J.R. (1993) *Women's eating disorders and the metaphors of narcissism: theoretical and personal perspectives*. Unpublished Masters thesis. Edmonton:University of Alberta.

Tests: A Comprehensive Reference for Assessments in Psychology 4th Edition 1997 editor Taddy Maddox Pro-Ed: Austin, Texas

Test Critiques Volume X 1994 Pro-Ed: Austin, Texas

Touyz, S.W., Garner, D.M., & Beumont, P.J.V. (1995). The inpatient management of adolescent patients with anorexia nervosa. In H.C. Steinhausen (Ed.) *Eating Disorders in Adolescence*. New York: Walter de Gruyer.

Vacc, N.A., & Rhyne, M. (1987). The Eating Attitudes Test: Development of an adapted language form for children. *Perceptual and Motor Skills, 65*, 335-336.

Vandereycken, W. & Meerman, R. (1992). 'The significance of follow-up investigations'. In W. Herzog, H.C. Deter, & W. Vandereycken, (eds). *The Course of Eating Disorders: Long-term Follow-up Studies of Anorexia and Bulimia Nervosa* (pp. 3-14). Berlin-New York: Springer.

Vandereycken, W. & Noordenbos, G. (1998) *The Prevention of Eating Disorders*. New York: New York University Press.

Vanderheyden, D.A., Fekken, G.C., & Boland, F.J. (1988). Critical variables associated with bingeing and bulimia in a university population: A factor analytic study. *International Journal of Eating Disorders, 7*, 321-329.

Vanderheyden, D.A., & Boland, F.J. (1987). A comparison of normals, moderate and severe binge-eaters, and binge-vomiters using discriminant functional analysis. *International Journal of Eating Disorders*, 6, 331-337.

Viale-Val, G., & Sylvester, C. (1993). Female delinquency. In M. Sugar (ed). *Female Adolescent Development* (pp.169-191). New York: Brunner/Mazel Inc.

Vissar, M. (1991). *The Rituals of Dinner*. Toronto: HarperCollins Publishers Ltd.

Vygotsky, L. (1986). *Thought and Language*. Cambridge: The MIT Press.

Wade, G.N., & Gray, J.M. (1979). Gonadol effects on food intake and adiposity: A metabolic hypothesis. *Physiology and Behavior*, 22, 583-593.

Wagner, S., Halmi, K.A., & Maguire, T.V. (1987) The sense of personal ineffectiveness in patients with eating disorders: One construct or several? *International Journal of Eating Disorders*, 6, 495-505.

Wardle, J. (1980) Dietary restraint and binge eating. *Behavior Analysis and Modification*, 4, 201-209.

Wardle, J. & Beales, S. (1986). Restraint, body image and food attitudes in children from 12 to 18 years. *Appetite*, 7, 209-217.

Wein, E.E. & Wein, R.W. (1995). Predictions of global warming influences on aboriginal food use patterns in Northwestern Canada. *Northern Review*, 15, 86-94.

West, D.A. (1995). The limits of a northern identity: An assessment of W.L. Morton's northern vision. *Northern Review*, 15, 95-115.

Welch, G. (1988). Selected multivariate statistical tecniques and eating disorders. *Unpublished doctoral dissertation*, University of Otago, New Zealand.

Wheeler, G. (1992) *Cognitive-behavioral approach to etiology of eating disorders.* Unpublished manuscript. Edmonton: University of Alberta.

Wilfey, D.E, Friedman, M.A., Dounchis, J.Z, Stein, R.E., Welch, R.R. & Ball, S.A (2000). Comorbid psychopathology in binge eating disorder: Relation to eating disorder severity at baseline and following treatment. *Journal of Consulting and Clinical Psychology*, 68, 641-649.

Williams, P., Hand, D., & Tarnopolsky, A. (1982). The problem of screening for uncommon disease-a comment on the Eating Attitudes Test. *Psychological Medicine*, 12, 431-4,

Williams, P., Tarnopolsky, A., & Hand, D. (1980). Case definition and case identification in psychiatric epidemiology: Review and assessment. *Psychological Medicine*, 10, 101-114.

Wilson, G.T. & Lindholm, L. (1987). Bulimia nervosa and depression. *International Journal of Eating Disorders*, 6, 725-732.

Wilson, G.T., Rossiter, E., Kleinfield, E.I., & Lindholm, L. (1986). Cognitive-behavioral treatment of bulimia nervosa: A controlled evaluation. *Behavior Research and Therapy*, 24, 277-288.

Wilson, J.M.G. & Jungner, G. (1968). Principles and Practice of Screening for Disease *(Public Health Papers 34)*, Geneva: World Health Organization.

Wing, R.R. & Jeffrey, R.W. (1999). Benefits of recruiting participants with friends and increasing social support for weight loss and maintenance. *Journal of Consulting and Clinical Psychology*, 67 (1), 132-138.

Wold, P.N. (1985). Family attitudes toward weight in bulimia and affective disorders – a pilot study. *The Psychiatric Journal of the University of Ottawa*, 10, 162-164.

Wolfe, N. (1990). *The Beauty Myth*. Toronto: Vintage Books

Wolfe, N. (1997). *Promiscuties*. New York: Random House.

Wonderlich, S.A. (1992). Relationship of family and personality factors in bulimia. In J.H. Crowther, D.L Tennebaum, S.E. Hobfell, & M.A.P. Stevens. (Eds.). *The etiology of bulimia nervosa; The individual and family context*. Ohio: Hemisphere Publishing.

Woodman, M. (1980). *The Owl was a Baker's Daughter*. Toronto: Inner City Books.

Wooley, S. & Wooley, O.W. (1986). Thinness mania. *American Health Magazine*, October, 68-74.

Yanovski, S.Z., Nelson, J.E., Dubbert, B.K., Spitzer, R.L. (1993). Association of binge-eating disorder and psychiatric comorbidity in obese subjects. *American Journal of Psychiatry*, 150, 1472-1479.

Yates, A., Leehey, K., Shisslak, C.M. (1983). Running – an analogue of anorexia? *New England Journal of Medicine*, 308 (5), 251-255.

Yates, W.R., Sieleni, B., & Bowers, W.A. (1989). Clinical correlates of personality disorder in bulimia nervosa. *International Journal of Eating Disorders, 8*, 473-477.

Young, L. (1999) *Portion sizes in America*. Unpublished dissertation. New York: New York University.

Young, (1990). *A meta-analysis of the relationship between AN and BN and depression*. Unpublished dissertation.

Yukon Executive Council Office (1996). *Community Profiles*. Whitehorse, Yukon: Bureau of Statistics.

Yukon Executive Council Office (1996). *Aboriginal Data*. Whitehorse, Yukon: Bureau of Statistics.

Yukon Executive Council Office (1996). *Ethnic Origin and Visible Minorities*. Whitehorse, Yukon: Bureau of Statistics.

Yukon Executive Council Office (1999). *Monthly Yukon Population Estimates*. Whitehorse, Yukon: Bureau of Statistics.

Yukon Executive Council Office (1996). *Education*. Whitehorse, Yukon: Bureau of Statistics.

Yukon Executive Council Office (1999). *Public School Enrollment*. Whitehorse, Yukon: Bureau of Statistics.

Yukon Executive Council Office (1994). *Yukon Health Promotion Research Program, Part 4: An Accounting of Health*. Whitehorse, Yukon: Bureau of Statistics.

Zapf, K. (1991) Educating social work practitioners for the North: A challenge for conventional models and structures. *The Northern Review*, 7, 35-52.

Appendix 1: Consent Forms

Research Survey
By Joanne Tessier, Chartered Psychologist
Doctoral Candidate

Dear Parents and Students:
I have prepared a research project that I hope you will be interested in and agree to participate. As you may know, eating disorders have been identified as a concern for some youths. The objective of this project is to determine how many Whitehorse teenagers may have an eating disorder concern and/or concerns for at-risk behaviors for eating disorders in Whitehorse.

I have received approval from the Department of Education and each school's administration to give a questionnaire to high school students in Whitehorse. It is titled: *Eating Disorders Inventory – Second Revision (EDI-II)*. The questionnaire takes approximately 20 minutes to complete and will be completed in school.

The results of this questionnaire survey will be analyzed and documented in my doctoral dissertation. As well, it is the intent of this researcher to provide a copy of the dissertation to the Department of Education, ideally to assist the curriculum planners with guidance regarding intervention of eating disorders. For the students, I hope they will gain an opportunity to reflect on their eating behaviors and attitudes. Also to facilitate their better understanding of eating disorders I will give them a lecture on eating disorders and be available if they have any concerns or questions.

Procedures will be taken to ensure that no individual students are identified. As well, to ensure confidentiality, students that participate will fill out only demographic information relevant to the study such as their age, sex, race, grade level, etc. Student names will not be on the questionnaires. **Each student's participation is voluntary**. At any time they have the right to not take part in the questionnaire. For further information, feel free to contact me at (867) 668-7549.

Before this research can proceed, I need permission from you, the parents and guardians, as well as the students. If I do not hear from you, I will infer consent. Please fill out below only if you **do not wish** for your child to participate and return it to the school by as soon as possible. Your child will also be asked for his/her consent.

Parent or Guardian:

I do **not** consent to having my son or my daughter ______________________take part in this questionnaire survey, under the conditions outlined.

_________________________________ Signature of parent/guardian

_______________ Date

Questionnaire Participation Agreement

Student:

_______ Yes, I do consent to participate in this study under the conditions stated.

______ No, I do not consent to participate in this study under the conditions stated.

____
signature of student

____
please print your name

____
date

I understand that I am free to withdraw my consent and terminate my participation at any time, without penalty.

Appendix 2: Outline of Eating Disorder Presentation

Who I am

Joanne Tessier
Chartered Psychologist
Doctoral Candidate

Why I am here

To talk about eating disorders
To do some research with you
To talk about being a psychologist
To talk about research

What I hope you will learn here

What eating disorders are and what you can do about them
How research is carried out
How one becomes a psychologist
What a psychologist does

The long journey
Love of learning
It starts with a question

The Education Journey
High School
College/University

Graduate Degrees
University courses and research
Masters
Doctorate

Chartering
Internship
Oral and Written Exams

It starts with a question?

Types of Research

Quantitative
Numbers

Qualitative
Personal stories

Descriptive
Inferential

Validity and Reliability
Sample Population

Approaches to Research

Ask questions
Observe people/animals
Run experiments
Summarize research

Analyze and share your results

Class projects
Papers and books
Talks and lectures

What are eating disorders?

Extreme expressions of a range of weight and food issues experienced by both males and females. They can have serious life threatening consequences.

They include:

Anorexia nervosa
Bulimia nervosa
Compulsive overeating

Eating refers to eating habits, weight management practices and attitudes about weight and body shape

Disorder refers to eating-related attitudes and behaviors that result in:

Loss of self-control
Obsession, anxiety, guilt
Distance from self and others
Physical imbalances that can harm you

What are the warning signs?

A marked increase or decrease in weight not related to a medical condition

The development of abnormal eating habits such as severe dieting, preference for strange foods, withdrawn or ritualized behavior at mealtime, or secretive bingeing

An intense preoccupation with weight and body image

Compulsive or excessive exercising

Self-induced vomiting, periods of fasting, or laxative, diet pill, or diuretic abuse

Feelings of isolation, depression, or irritability

Nutritional Deprivation

1. The effects of starvation/deprivation
2. The relationship between restricting and bingeing
3. Setpoint
4. Overcoming effects of deprivation/starvation
5. Addiction to food? Emotional eating?
6. The relative ineffectiveness of purging

Tips for Eating Well and Feeling Good About Yourself

Be healthy and fit
Have fun
Feel good about how you look
Eat when hungry
Stop eating when full
There are no good or bad foods
If you're sad, mad or bored…talk, do
Find something active you like to do
Remind yourself we come in all shapes and sizes
Don't tease other people about their size

Tips to tell others if they say they are fat and need to go on a diet

"You look fine just the way you are."

"Please don't, dieting is not healthy or fun, eat well and be active."

"Remember, being thinner is not the same thing as being healthier and happier."

Normal Eating

Eat small snacks and regular meals
Taste your food and enjoy it
Don't starve yourself
Eat in the morning and every few hours after
Avoid foods that trigger a binge
Throw out the weigh scale
Don't Diet
After eating, do something you like
Don't count calories
Concentrate on what your body feels like when you eat in response to hunger
Think of food as food as fuel
Don't exercise excessively
Remind yourself that no one type of food will make you fat, when eaten in moderation, so allow yourself treats

Getting Help

Your help can include individual, family and group therapy
Support groups
Medical and nutritional counselling
Chat groups on the internet
Hospitalization and/or Medications

How to help a friend with an eating disorder

1. Talk to the person in a private place.
2. Tell them what you've seen and what your concerns are and want to help.
3. Give them time to talk. Listen.
4. Don't argue with them if they deny it, realize denial is part of the problem, just repeat you are worried for them.
5. Provide information about help. Offer to go with them for help.
6. If you're concerned it is dangerous, ask help of another friend, therapist, teacher, parent, doctor, etc.
7. Don't try to be a hero or a rescuer.
8. Eating disorders are usually not emergency situations, but if the person is suicidal get help immediately.

Things not to say

"Just sit down and eat like a normal person."
"Why are you doing this to me?"
"You've put on weight, you look great."
"Are you making any progress?"
"I'll help fatten you up."
"Are you keeping anything down?" or "When was the last time you puked?"
"You look terrible."
"You're ruining our family."
"What have you eaten today?"
"Go ahead and have a drink or eat that. You'll just go and throw it up anyways, so what does it matter."
"For someone with an eating disorder, you're sure pigging out today."
"You look so healthy, you were always so thin before."
"You just need to exercise."
"You're doing this for attention."

Someone with an eating disorder has the best chance of recovery when surrounded by people who are loving and supportive. Recovery takes a lot of time and hard work, but with good support and treatment, eating disorders can be overcome.

To Students, Parents, Teachers, School Counsellors and School Administrators

I was asked to prepare a list of individual therapists and agencies that could provide help to individuals who are concerned about an eating disorder. Following is the list with phone numbers. As well, for further information, the internet site found with a search for "eating disorders" has many resources and chat lines. At present there is a group for *women with eating disorders* that Mental Health Services is running. This type of group could be formed for adolescents, given that there are enough adolescents with an eating disorder concern. In addition, it is helpful to meet with your family physician.

(A list of private practitioners and agencies were distributed to the schools and to the teachers and school counsellors).

Appendix 3: EDI-2 Subscale Descriptions

(DT) Drive for Thinness (7 items)

This is identified as a core psychopathology trait of both anorexia and bulimia, and requisite criteria for diagnosis of either. There is an intense drive to be thinner or a fear of fatness that is assessed by items regarding excessive concern with dieting, preoccupation with weight, and fear of weight gain. The authors of this test cited Bruch (1973, 1982) as the source of this concept for describing the "drive for thinness" or the "relentless pursuit of thinness" and Russell (1970) for describing the antithesis, the "morbid fear of fatness."

Examples of items on this subscale are:

I eat sweets and carbohydrates without feeling nervous.
I think about dieting.
I am terrified of gaining weight.

(B) Bulimia (7 items)

This scale is intended to measure binge eating, which is one of the defining and diagnostic features of bulimia. It is also a feature that is used to differentiate between the subtypes of anorexia restrictors and anorexia bulimics. Pyle, Halvorson, Neuman, & Mitchell (1986) found that there are individuals who engage in this behavior but do not meet all the criteria for an eating disorder diagnosis. The items are used to assess tendencies to think about and engage in bouts of uncontrollable eating.

Examples of items on this subscale are:

I eat when I am upset.
I stuff myself with food.
I eat or drink in secrecy.

(BD) Body Dissatisfaction (9 items)

The items on this scale were developed for the assessment of dissatisfaction with one's overall shape and with the size of the areas of the body commonly of concern for persons with eating disorders such as the buttocks, thighs, stomach, etc. There is some controversy over the screening potential of this scale. The test author stated that the rationale for inclusion of this scale despite the widespread body dissatisfaction in the general population is that "in its extreme form it is considered to be a central feature of the AN and BN eating disorders (p.5)." He added that body image disturbance and body dissatisfaction are major factors responsible for initiating and sustaining the weight-controlling behaviors of the eating disordered.

Examples of items on this subscale are:

I think my stomach is too big.
I feel satisfied with the shape of my body.
I think my buttocks are too large.

(I) Ineffectiveness (10 items)

The items on the Ineffectiveness scale are applicable to many individuals. They are included to assess feelings of general inadequacy, insecurity, worthlessness, emptiness, and lack of control over one's life. The test author indicated that ineffectiveness is "conceptually very closely related to poor self-esteem or negative self-evaluation. This scale is also intended to assess feelings of emptiness and aloneness. High scores on this subscale reflect a significant deficit in self-esteem owing to intense feelings of inadequacy (p.5)." The author further indicated that this construct has been identified as a causal factor in the development of eating disorders (Garner & Bemis, 1985; & Wagner, Halmi & Maguire, 1987).

Examples of items on this subscale are:
I feel ineffective as a person.
I feel secure about myself.
I feel empty inside (emotionally).

(P) Perfectionism (6 items)

Essentially this is a scale that was developed for the measurement one's high to superior expectations for personal performance and achievement and for the measurement of the perception that others' expectations of them are similar. This is not considered a diagnostic criteria item for an eating disorder diagnosis; however, it has been identified as a personality trait of persons with eating disorders (Bruch, 1978; & Slade, 1982).

Examples of items on this subscale are:
Only outstanding performance is good enough in my family.
I hate being less than best at things.
I feel I must do things perfectly or not do them at all.

(ID) Interpersonal Distrust (7 items)

This scale is described as an assessment of one's need to keep others at a distance, a construct that has been described as a major psychological theme in eating disorder cases. The author cites the following research supporting this construct: Goodsitt, 1977; Johnson & Connors, 1987; Selvini-Palazzoli, 1974; Story, 1976; and Strober, 1981a). Essentially, the items were included to tap into one's feelings of alienation and avoidance of close relationships.

Examples of items on this subscale are:
I am open about my feelings.
I have close relationships.
I have trouble expressing my emotions to others.

(IA) Interoceptive Awareness (10 items)

This subscale was included for the assessment of one's ability to identify accurately one's own emotional states and bodily sensations related to eating, hunger, and satiety. Garner and Bemis (1985) and Selvini-Palazzoli (1974) found confusion and mistrust related to affective and bodily functions was important in the development and maintenance of some cases of AN and BN. Apparently, Selvini-Palazzoli termed the anorexic patient's profound distrust of internal states as "intrapsychic paranoia" (p.6).

Examples of items on this subscale are:

I get frightened when my feelings are too strong.
I can clearly identify what emotion I am feeling.
I feel bloated after eating a normal meal.

(MF) Maturity Fears (8 items)

This scale was based on identifying the desire or need to retreat to the security of childhood. The author indicated that this construct was developed with the understanding that: "Starvation becomes the mechanism for avoiding psychobiological maturity because the result is in a return to prepubertal appearance and hormonal status. This regression is thought to provide relief from adolescent turmoil and conflicts within the family (p.6)." Crisp (1965, 1980) was cited as a researcher who has studied and reported on this phenomenon.

Examples of items on this subscale are:

I would rather be an adult than a child.
I wish I could return to the security of childhood.
I wish that I could be younger.

EDI Provisional Subscales

(A) Asceticism (8 items)

This scale was described as the measurement of one's belief in the virtue of pursuit of spiritual ideals such as self-discipline, control of bodily urges, self-restraint, self-denial, etc. Asceticism is a theme that was characterized in the early occurrences and understanding of eating disorders (Brumberg, 1988; Bell, 1985; Casper, 1983; & Rampling, 1985). More recently, aesthetic virtue has been found less often and has been found to occur more as the pursuit or drive for thinness and oral self-restraint. The author cited the research conclusions from Haimes & Katz, (1988) in which they suggested that oral self-restraint may be a part of a more general theme of physical gratification (p.6).

Examples of items on this subscale are:

I am ashamed of my human weaknesses.
I go out of my way to experience pleasure.
Suffering makes you a better person.

(IR) Impulse Regulation (11 items)

This scale was intended for the measurement of a tendency towards impulsivity, self-destructiveness, recklessness, and other destructive attitudes and behaviors such as substance abuse and destructiveness in relationships. While impulse regulation is not considered one of the diagnostic criteria for an eating disorder diagnosis, poor impulse regulation has been identified as a poor prognostic sign in eating disorders. The author cited a great deal of research that supports this finding (Casper, 1990; Casper, Eckert, Halmi, Goldberg, & Davis, 1980; Hatsukai, Mitchell, Eckert, & Pyle, 1986; Heilbrum & Bloomfield, 1986; Lacey & Evans, 1986; Sohlberg, Norring, Holmgren, & Rosmark, 1989; & Strober, 1980, 1980, 1983). He also indicated that with this scale's items there were overlapping characteristics with borderline personality disorder and cites the many researchers on this finding (Cooper et al, 1988; Garner, Olmstead, Davis, Rockert, Goldbloom & Eagle, 1990; Johnson & Connors, 1987; Johnson, Tobin & Enright, 1989; & Swift & Letven, 1984). The author reports that this scale has been compared to the MMPI scale for psychopathic deviance, which has been found to be useful in the discrimination of groups of people with and without bulimia (Dykens & Gerrard, 1986; & Norman & Herzog, 1984). Examples of items on this subscale are:

Other people would say that I am emotionally unstable.
I can't get strange thoughts out of my head.
I experience marked mood shifts.

(SI) Social Insecurity (8 items)

This scale was developed to for the measurement of one's perceptions of self-doubt and insecurity in social relationships. Included with this construct was the assessment of one's sense that social relationships "are tense, insecure, disappointing, unrewarding, and generally of poor quality (Garner, 1991, p.6)." The author indicated that while social insecurity is not an eating disorder diagnostic criterion, it has been observed in eating disorder patients and thus there are implications for treatment with this construct. He cited research related to this construct (Bruch, 1973; Herzog, Keller, Lavori & Ott, 1987; Norman & Herzog, 1984; & Strober, 1980, 1981a).

Examples of items on this subscale are:

I feel relaxed in most group situations.
I feel that people give me the credit I deserve.
I know that people love me.

Appendix 4: EDI-2 Norms

EDI-2 Raw Score Equivalents for the 75th and 99th Percentiles, Males and Females were based on the Rosen, Silberg, & Gross (1988). These were included in the EDI-2 professional manual. These norms were based on 1373 nonpatient high school boys (N=698) and girls (N=675) in grades 9 to 12 from public high schools in the northeastern United States. The norm group was comprised of a range of social, economic, and ethnic groups.

Table 1

Raw Scores and Percentile Equivalents for High School Norms

	75th percentile		99th percentile	
EDI-2 Subscales	Girls	Boys	Girls	Boys
Drive for Thinness	8.7	2.5	19.0	12.0
Bulimia	2.5	1.0	15.0	9.0
Body Dissatisfaction	16.9	6.2	26.0+	19.0
Ineffectiveness	5.5	4.0	21.0	14.0
Perfectionism	7.5	8.0	17.0	15.0
Interpersonal Distrust	5.0	5.2	16.0	17.0
Interoceptive Awareness	6.0	4.0	20.0	14.0
Maturity Fears	5.0	5.5	15.0	16.0

The raw scores and percentile equivalents for eating-disordered patients (N = 889) were provided in Appendix 4 of the EDI-2 professional manual. Included are patients with Anorexia Nervosa-Restrictor subtype (129), Anorexia Nervosa-Bulimic subtype(103), and Bulimia Nervosa (657)

Table 2

Raw Scores and Percentile Equivalents for Eating-Disordered Patients

EDI-2 Subscale	75th percentile	99th percentile
Drive for Thinness	18.5	20.0+
Bulimia	14.5	20.0+
Body Dissatisfaction	24.0	26.0+
Ineffectiveness	16.2	29.0
Perfectionism	12.1	17.0+
Interpersonal Distrust	8.5	17.0
Interoceptive Awareness	15.5	27.0
Maturity Fears	5.7	20.0
Asceticism	8.3	22.0
Impulse Regulation	8.3	20.0
Social Insecurity	11.3	21.0

Appendix 5: Frequency measures of each score on the EDI-2 Subscales

Table 1.0

Number of students scoring at each score on EDI-2 subscales

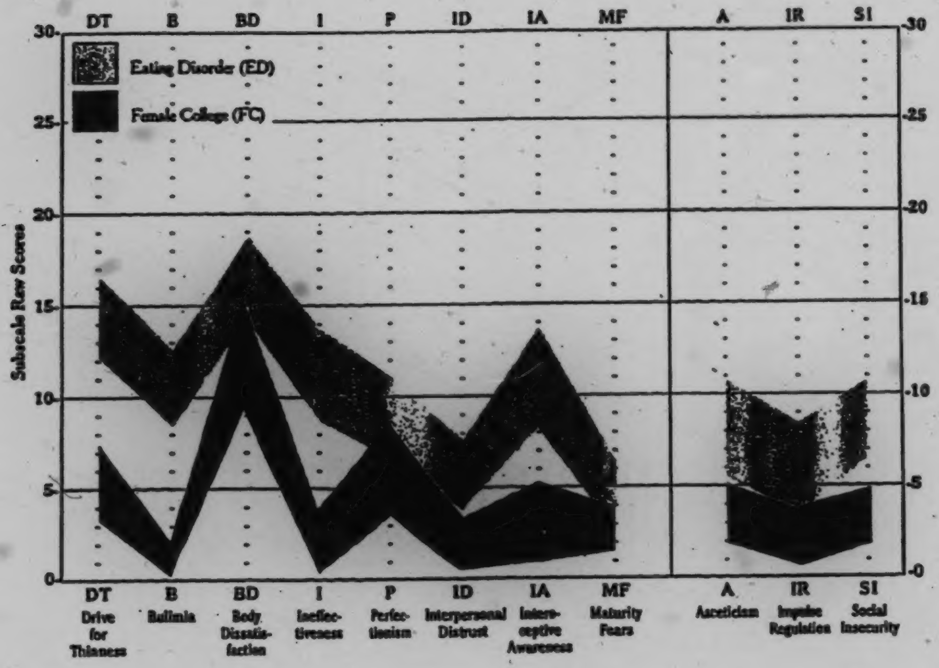
SubscaleScores	DT	B	BD	IN	P	ID	IA	MF	A	IR	SI
0	227	258	115	202	76	106	176	33	29	153	82
1	37	52	40	52	35	54	57	35	47	59	58
2	32	44	36	44	58	54	51	59	71	33	56
3	46	34	39	30	58	54	54	69	95	46	57
4	14	15	19	21	39	40	22	52	65	28	48
5	13	8	16	20	33	37	21	42	48	17	31
6	22	17	25	15	39	22	13	33	35	21	18
7	5	6	20	12	17	24	12	35	18	17	22
8	12	3	13	5	30	7	1	17	11	12	11
9	6	3	14	9	18	18	15	24	10	17	15
10	7	1	9	9	12	5	6	9	6	7	9
11	6	1	7	5	9	5	3	12	4	7	10
12	8	2	14	3	9	7	2	13	4	8	7
13	5	0	11	4	4	9	1	5	0	3	9
14	2	2	9	3	2	3	3	1	1	3	3
15	3	0	13	1	5	0	2	3	3	2	3
16	0	1	6	2	1	1	0	3	0	1	1
17	1	0	9	3	3	0	1	0	0	1	1
18	2	2	5	2	2	3	0	0	1	3	2
19	0	0	5	0		0	0	2		1	0
20	0	0	5	2		0	3	0		1	0
21	2	1	2	1		1	1	2		4	1
22			1	0			2	0		0	1
23			4	0			1	1		1	0
24			2	2			0			1	1
25			2	0			0			0	
26			1	0			0			0	
27			6	0			0			1	
28			2	1			2			0	
29				0			0			0	
30				1			1			1	
31				1							

Appendix 6

Whitehorse Boys' and Girls' Means and Standard Deviations on EDI-2 Subscales

	Boys		Girls	
Scales	M	SD	M	SD
Drive for Thinness	1.6059	3.2216	3.2922	4.2330
Bulimia	1.9704	3.3165	1.1605	2.2478
Body Dissatisfaction	3.6158	5.1799	8.0905	7.2929
Ineffectiveness	2.9803	5.3325	2.8272	4.1644
Perfectionism	4.6857	3.9237	4.2181	3.7732
Interpersonal Distrust	3.9261	3.6694	3.2634	3.5970
Interoceptive Awareness	2.8818	4.8966	2.6996	3.7971
Maturity Fears	5.0591	4.0082	4.8148	3.6367
Asceticism	4.0542	3.0737	3.6337	2.4244
Impulse Regulation	4.5025	5.5073	2.8395	3.9890
Social Insecurity	4.5123	4.4213	3.6255	3.6944

Appendix 7 : Sample of EDI-2 Profile Form in the EDI-2 Administration Manual



Raw Score ____ ____ ____ ____ ____ ____ ____ ____ ____ ____ ____

Percentile Score ____ ____ ____ ____ ____ ____ ____ ____ ____ ____ ____

Normative Group = Normative Table =